

Transactions of the
**Royal Society
of Canada**

Mémoires de la
**Société royale
du Canada**



1989 / FIFTH SERIES / VOLUME IV
1989 / CINQUIÈME SÉRIE / TOME IV

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Royal Society of Canada / Société royale du Canada / Ottawa

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Symposium:
Progress
Colloque:
Le progrès



L'évolution de l'idée de progrès à travers l'histoire[†]

L'IDÉE DE PROGRÈS, cette notion selon laquelle l'homme est capable d'améliorer graduellement son sort sur la terre, fait partie de ces concepts nouveaux qui surgissent en un lieu et à une époque donnés. C'est une idée qui appartient en propre à la civilisation occidentale, et qui est apparue vers la fin du XVIII^e siècle. Ce n'est ni une idée universelle ni une idée qui allait de soi pour l'humanité. Les Grecs et les Romains pensaient généralement que l'histoire de l'humanité se déroulait suivant des cycles. L'humanité pouvait avancer pendant un certain temps, mais la roue continuait de tourner, et l'humanité retournait à un niveau inférieur. S'il y avait eu un âge d'or, un état de nature mythique et égalitaire où les hommes partageaient leurs biens et vivaient en harmonie dans la paix et la bonne volonté, c'était dans un passé lointain. Cet âge avait disparu dans un passé nébuleux, était irrémédiablement perdu. Pour les Grecs et les Romains, le temps était bien un ennemi.¹

En instaurant une vision nouvelle de l'histoire, la tradition judéo-chrétienne a ouvert la voie à ce que nous appelons l'idée de progrès. Pour les juifs, et plus tard pour les chrétiens, l'histoire était une révélation progressive du dessein de Dieu. Elle était donc perçue comme *linéaire* et non plus cyclique. Elle se développait suivant une ligne plus ou moins droite au lieu de tourner avec la roue. Les historiens chrétiens ont habitué l'Occident à penser l'histoire comme une succession d'étapes vers un but ultime. Dans la religion chrétienne, par exemple, l'Ancien Testament, le Nouveau Testament et l'histoire de l'Église étaient des étapes successives de la révélation. C'est exactement ce qu'en

* Department of History, Queen's University.

† Présenté au colloque, « Le progrès », Université Laval, le 6 juin 1989.

¹ Dans *The Idea of Progress in Classical Antiquity* (Baltimore, 1967), Ludwig Edelstein signale que quelques penseurs de l'Antiquité avaient une certaine idée du progrès, mais que cette idée n'était guère répandue et qu'elle n'a jamais eu d'influence.

jargon d'historien on appelle une « périodisation de l'histoire. » En plus, juifs et chrétiens avaient une vision *optimiste* de l'avenir. Les juifs appelaient de leurs vœux le Messie. Les premiers chrétiens et toute une série de prédicateurs radicaux du moyen âge attendaient le retour du Christ. Selon les chrétiens, il y aurait d'abord le retour du Messie, puis la félicité du paradis et de la vie éternelle, au moins pour les élus. Enfin, leur message d'espoir était *universel*, destiné à toute l'humanité. Il avait une dimension oecuménique, c'était une vision mondiale. Mais il ne s'agissait pas de l'idée de progrès, pour au moins deux raisons. Premièrement, c'est Dieu qui contrôlait l'exposition graduelle de la révélation et le développement de l'humanité. Or, derrière la contrôle divin, il y a la Providence, mais pas le progrès. Deuxièmement, l'objectif visé n'était pas le bonheur terrestre. L'objectif n'était pas de progresser matériellement et moralement vers un avenir meilleur sur cette terre. Le bonheur n'était pas de ce monde, il était renvoyé à l'au-delà.

L'idée de progrès, à laquelle ces notions chrétiennes avaient en quelque sorte ouvert la voie, est apparue au XVIII^e siècle en Europe, c'est-à-dire en un lieu et à une époque donnés, pour un certain nombre de raisons.² D'abord, depuis le moyen âge, l'Europe s'était graduellement sécularisée ou, si l'on préfère, laïcisée. Au cours de la Renaissance, du XVII^e siècle et finalement du XVIII^e siècle, les Européens se sont de plus tournés vers ce monde-ci pour combler leurs désirs et leurs aspirations. Cela ne veut pas dire que l'au-delà avait complètement disparu de leurs préoccupations. Mais à compter du XVIII^e siècle, le bonheur de l'humanité était devenu un de leurs buts essentiels. En outre, vers la fin du XVII^e et surtout au début du XVIII^e siècle, certains intellectuels ont coupé le cordon ombilical qui reliait l'humanité à la Providence comme moteur de l'histoire. Récusant l'idée d'un contrôle divin, ils affirmaient que l'homme est capable de forger son destin. Cette révolte contre la religion traditionnelle, cette mise à l'écart de Dieu, cette façon de lui enlever le contrôle immédiat de notre vie quotidienne, préparait le terrain à l'idée d'un développement progressif de l'histoire. A cela s'ajoute le sentiment d'un progrès réel de l'humanité tout au long des XVI^e, XVII^e et XVIII^e siècles. L'alphabétisation se répandait, l'invention de l'imprimerie multipliait les livres, l'homme découvrait le monde, et la vie devenait plus civilisée et plus facile. C'était d'ailleurs l'une des raisons de la sécularisation progressive des valeurs.

Puis vinrent les formidables découvertes scientifiques des XVI^e et XVII^e siècles, des découvertes dont les Européens étaient très conscients et très fiers, au point d'inspirer ces vers au poète anglais Alexander Pope :

2 Sur la formation et la diffusion de l'idée de progrès, cf. J.B. Bury, *The Idea of Progress* (New York, 1932); C. Frankel, *The Faith of Reason: the Idea of Progress in the French Enlightenment* (New York, 1948); S. Pollard, *The Idea of Progress: History and Society* (1968); R.V. Sampson, *Progress in the Age of Reason: the Seventeenth Century to the Present Day* (1956); E.L. Tuveson, *Millenium and Utopia: a Study in the Background of the Idea of Progress*, Berkeley, 1949; C. Van Doren, *The Idea of Progress* (New York, 1967); et W.W. Wager, ed., *The Idea of Progress Since the Renaissance* (New York, 1969).

"Nature and Nature's laws lay hid in night;
God said, 'let Newton be,' and all was light."

Ces percées de la science rendaient plus crédible ce qu'on pourrait appeler la vision baconienne de la domestication de la nature. Dans un roman intitulé *La Nouvelle Atlantis*, Bacon mettait en scène une équipe de savants s'efforçant de résoudre divers problèmes humains et d'améliorer la vie sur terre par leur travail en laboratoire. Il faisait ainsi naître l'espoir que l'homme réussirait un jour à dominer le monde et à le faire servir à ses propres fins. Grâce à ces découvertes scientifiques, on pouvait déjà envisager de maîtriser la nature; plus important encore, l'idée se faisait jour que la solution des problèmes humains n'était qu'une question de méthode. Dès la deuxième moitié du XVII^e siècle, on croyait à l'idée que, si les hommes appliquaient une juste méthode—non pas la spéculation religieuse ni des élucubrations métaphysiques, mais une démarche rationnelle, mesurée, empirique et scientifique—ils pourraient résoudre bien des problèmes sociaux. En appliquant cette juste méthode, ils deviendraient les Galilée et les Newton de la société, et ils instaурeraient dans la sphère sociale le même type d'harmonie et de régularité qu'ils avaient découvert dans la sphère physique. L'espoir de perfectionner l'humanité est l'un des fondements de l'idée de progrès.

L'épistémologie lockéenne renforçait cet espoir de perfectionner l'homme comme animal social. Locke enseignait que l'enfant naît sans propension particulière au bien ou au mal. Il est comme une cire vierge sur laquelle on peut imprimer ce qu'on veut. L'esprit humain est malléable et soumis à l'influence de l'environnement. Il semblait en découler qu'il suffisait de donner l'éducation appropriée à l'enfant, de manipuler son environnement dans le bon sens, pour créer un homme nouveau. L'homme pouvait se régénérer sans intervention divine. L'éducateur reprenait le rôle de Dieu.

Je voudrais donner quelques exemples de cette foi dans le progrès au XVIII^e siècle. Faute de temps, je ne pourrai malheureusement pas nuancer cet exposé en donnant aussi la parole aux pessimistes récalcitrants, à ceux qui continuaient d'entretenir une sombre vision de l'histoire de l'humanité. Il existe d'ailleurs un livre sur le pessimisme du XVIII^e siècle.³ Il n'en reste pas moins vrai que d'autres intellectuels défendaient l'idée de progrès, l'idée selon laquelle l'homme peut améliorer graduellement sa condition terrestre au point de vue économique, technique et moral. Je voudrais citer l'article « encyclopédie » de la fameuse *Encyclopédie, ou Dictionnaire raisonné des arts, des sciences et des métiers*. La publication des dix-sept volumes in-folio de cette oeuvre immense a duré de 1751 à 1765, les volumes de planches et les tables ayant été publiés plus tard. Rédigée sous la direction de Denis Diderot, elle est considérée comme une des oeuvres les plus représentatives du XVIII^e siècle. Voici comment Diderot définit le but de cette publication :

3 H. Vyverberg, *Historical Pessimism in the French Enlightenment* (Cambridge, Mass., 1958).

6 La Société royale du Canada

Le but d'une *encyclopédie* est de rassembler les connaissances éparses sur la surface de la terre ; d'en exposer le système général aux hommes avec qui nous vivons, et de la transmettre aux hommes qui viendront après nous ; afin que les travaux des siècles passés n'aient pas été des travaux inutiles pour les siècles qui succéderont ; que nos neveux, devenant plus instruits, deviennement en même temps plus vertueux et plus heureux ⁴

Cet extrait résume en quelque sorte l'évangile des Lumières, l'affirmation qu'une humanité plus instruite sera à la fois plus vertueuse et plus heureuse.

Les onze volumes de l'*Encyclopédie* illustrent l'ensemble des méthodes scientifiques et des techniques artisanales et industrielles du siècle. Ils constituent une véritable mine d'informations visuelles sur l'état des sciences et des techniques au XVIII^e siècle. Et ils révèlent à quel point la confiance de Diderot dans la science et la technologie jouait un rôle important dans la conviction qui l'a poussé à consacrer sa vie à l'*Encyclopédie*.

Le baron d'Holbach collabora avec Diderot à l'*Encyclopédie*. Intellectuel progressiste et athée, il soutenait dans un essai intitulé *la Morale universelle* que si tous les moyens de communication de l'époque—livres, pièces de théâtre, chansons, peinture, etc.—étaient mobilisés pour propager la méthode critique, pondérée, empirique et rationnelle qu'il préconisait, il serait possible de répandre parmi le peuple une nouvelle morale laïque enfin libérée du fanatisme de religions dépassées. Il serait possible de créer une société éclairée.

Autre signe de cette confiance dans le progrès, les romans utopiques sont transportés dans un lieu réel du futur, alors qu'à l'origine le mot « utopie » signifiait « nulle part. » Jusqu'alors, les romans utopiques avaient généralement pour cadre des lieux mythiques, des endroits qui n'existaient pas, des îles lointaines du Pacifique ou des terres inexplorées. Le fait que l'utopie soit ainsi déplacée d'un lieu imaginaire à un lieu réel du futur révèle une avance substantielle de l'idée de progrès. Ainsi, en 1770 paraît *l'An 2440*, de Louis Sébastien Mercier, qui porte en sous-titre « Rêve s'il en fut jamais. » Le héros de ce roman d'anticipation s'endort dans le Paris du XVIII^e siècle et se réveille en plein avenir. Il découvre que la ville s'est transformée, que la société a progressé, que les citoyens sont instruits et vivent en harmonie, qu'ils sont prospères et soucieux du bien-être d'autrui, qu'ils sont gouvernés par un monarque éclairé, et surtout que la paix règne sur l'humanité et que les peuples de couleur jouissent d'une parfaite égalité.

Vient ensuite un livre qui est peut-être le meilleur et sûrement le plus dramatique exemple de confiance dans le progrès, un livre écrit par Condorcet pendant qu'il se cachait pour échapper à la Terreur. Condorcet était l'un des grands mathématiciens du XVIII^e siècle, et il avait également écrit sur l'éducation et plusieurs autres sujets. Dès le début de la Révolution, il s'est jeté dans la

⁴ « Encyclopédie, » dans l'*Encyclopédie, ou dictionnaire raisonné des sciences, des arts et des métiers . . . mis en ordre par M. Diderot et par M. d'Alembert*, Tomes I–VII, Paris, 1751–1757; Tomes VIII–XVII, Neuchâtel, 1765. Citation extraite du T.V, p. 635.

bataille politique. Comme la Révolution approchait de son point culminant, il siégeait à la Convention parmi les républicains modérés. Malheureusement, dans une lettre à ses commettants, il dénonça un projet de constitution rédigé par un groupe plus radical que le sien. Il dut s'enfuir de la Convention et se réfugier dans la clandestinité, à Paris, ce qui fit de lui automatiquement un hors-la-loi. Malgré l'ombre de la guillotine qui s'étendait sur lui, il écrivit un des ouvrages les plus remarquables de la civilisation occidentale, *l'Esquisse d'un tableau historique des progrès de l'esprit humain*. Certes, ce livre est rempli d'erreurs de détail, parce qu'il a été rédigé dans la clandestinité, loin de toute bibliothèque, mais il n'en reste pas moins très impressionnant. Condorcet finit par être découvert et arrêté. On ignore s'il s'est suicidé plutôt que d'être exécuté ou s'il est mort victime des intempéries alors qu'il s'enfuyait. Malgré les circonstances, ce mathématicien voyait l'histoire parcourir dix étapes progressives pour aboutir à une civilisation mondiale et à la prospérité universelle. Il s'agit d'une vision proprement oecuménique du progrès de l'humanité. Je voudrais avoir le temps de décrire en détail la dixième et dernière étape de l'histoire selon Condorcet, une étape dont il croyait déjà voir de début. L'humanité n'y vit pas seulement dans l'abondance, mais aussi en pleine égalité. Les femmes sont les égales des hommes, l'égalité et l'harmonie règnent entre les peuples. Il n'y a plus d'empires coloniaux, l'exploitation des Noirs et des Asiatiques par les Européens a disparu. Nous contemplons une société où l'égalité gouverne les rapports entre les citoyens, entre les sexes, entre les races. Et ce monde nouveau se caractérise par l'application systématique d'une méthode, d'un mode de pensée si précis, si mathématique et si infaillible que l'esprit humain est presque délivré de l'erreur.⁵ Condorcet était fait pour le siècle de l'informatique. Son livre est d'autant plus remarquable qu'il a été écrit par un homme traqué et menacé de mort. Il représente l'équivalent profane des prophéties de saint Jean dans l'Apocalypse.

Malgré les nombreuses révolutions et les graves conflits du XIX^e siècle, beaucoup d'Européens continuaient de croire au progrès. Au milieu du siècle, par exemple, un Britannique du nom de Patrick Dove, qui pensait que la politique pourrait devenir une science exacte, écrivit un livre au titre révélateur : *Théorie du progrès humain et probabilité naturelle d'un règne de justice*. Dans *Le Capital*, paru en 1867, et dans ses autres écrits, Marx défendait une variante de l'idée de progrès : de lutte de classes en lutte de classes, l'humanité avance vers la révolution finale grâce à laquelle le prolétariat pourra instaurer une dictature provisoire. Celle-ci conduira à l'avènement d'une société communiste sans État dans laquelle l'homme pourra réaliser toute sa créativité. Un jour, l'esthétique remplacerait l'économie. Deux années plus tard, dans son article « Progrès, » le *Grand Larousse du XIX^e siècle* soulignait que l'idée en était désormais acceptée par presque tous les hommes évolués.

En 1888, l'Américain Edward Bellamy publia un roman utopique au reten-

5 A.-N. de Condorcet, *Esquisse d'un tableau historique des progrès de l'esprit humain* (1795).

tissement considérable, *Looking Backward*, dont le héros s'endort dans le Boston de 1887 pour se réveiller en l'an 2000. Il constate que l'entreprise privée est remplacée par un capitalisme d'État, que le travail de tous est motivé par le bien public plutôt que par l'intérêt privé, et que les hommes vivent en harmonie dans une société communautaire. Peu de temps après, en plein milieu de la Première Guerre mondiale, dont on aurait cru qu'elle tempérerait l'optimisme des contemporains, un historien britannique fit paraître une série d'essais intitulés *Progress and History* qui décrivaient les progrès accomplis pendant la préhistoire, dans la Grèce antique, au moyen âge, dans la religion, dans la moralité, dans le gouvernement, dans l'industrie, dans les arts, dans les sciences et dans la philosophie. L'auteur du dernier essai de la série, James Smith, soutenait que l'incontestable réalité du progrès devrait inspirer un idéal d'action : « nous avons analysé le contenu de la notion de Progrès, montré à quel moment elle s'était imposée dans la conscience de l'humanité et à quel point cette idée s'est réalisée—s'est transformée en fait—dans les différents domaines de la vie. »⁶

Au cours du XX^e siècle, l'idée de progrès a perdu du terrain. Notre vision de l'avenir est souvent pessimiste. Nous sommes très loin de l'égalité des citoyens, des sexes, des nations et des races que Condorcet entrevoyait déjà. Deux guerres mondiales et l'Holocauste ont ébranlé notre image positive de la nature humaine. Les percées scientifiques, technologiques et économiques qui promettaient la prospérité à l'humanité nous ont apporté au contraire la menace de destructions massives et d'une dégradation irréversible de l'environnement. Une explosion démographique imprévue met en danger notre qualité de vie. Devant ces faits, que reste-t-il de l'idée de progrès ? Et si elle a perdu toute crédibilité, pourrions-nous vivre sans l'espoir d'améliorer, ou au moins de perpétuer, la vie pour nous et nos descendants ?

6 J.A. Smith, « Progress as an Ideal of Action, » in F.S. Marvin, ed., *Progress and History* (Oxford, 1917), pp. 295-314. Citation extraite de la page 295.

Relativism, Truth, and Progress†

IN THIS PAPER, I shall examine the notion of progress from a post-modernist perspective, one which holds that science is not just a human achievement but a cultural achievement as well.¹ On the face of it, the suggestion that science is just another culture would appear to undermine the deeply-entrenched belief that it is cognitively superior to other human activities because it is the very paradigm of cognitive progress. But even if we accept the relativist thesis that the goods of science are on a par with other cultural products so far as their methods of production are concerned we can still defend the notion that science is conducive to progress. Folk wisdom may evolve and it is doubtless informative, but science changes in a way that sets it apart from other cultures. What distinguishes science is its success in fostering *stable* disciplinary structures that allow its practitioners to examine bits of nature *as though they are not bound by their contextual horizons*. It is this movement from unstable belief systems to relatively stable disciplinary structures that furnishes us with an external yardstick for measuring change in science and judging it to be progressive.

SCIENCE TRANSCENDENT

The flourishing of relativism in recent times is closely related to cultural diversity, and to the belief that pluralism is a social good. But to the generals who masterminded the victory of Newtonian science over the Scholasticism of the Schools, the diversity fostered by tradition was one of the primary obstacles

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† Presented at the symposium, "Progress," Université Laval, 6 June, 1989.

1 My discussion will be restricted to progress in terms of our cognitive goals; worries about spiritual, moral, and other senses of the term will be set aside.

to enlightenment. Voltaire's *La Princess de Babylone* (1768) is representative of a large body of eighteenth-century literature that exploits this supposed opposition between science and tradition. It is a tale of a pair of lovers, Amazon the Gargaride from further India and Formosante the Princess, and their pursuit of one another across the continents of Asia and Europe. At least a paragraph is devoted by Voltaire to each location visited by the lovers, revealing his belief that tradition and the diversity which it engenders are opposed to enlightenment (see Brown 1976). The eighteenth century witnessed a dazzling array of governmental systems, varieties of republics, principalities and federations, monarchies (hereditary and elective), free cities, and theocratic states. Even so, Voltaire was convinced that a mind equipped with the scientific method could overcome the dogma and illusion nurtured by tradition; from the Sirian giant Micromégas to Candide and the Huron of *L'Ingenu* (1767), each of Voltaire's fictional heroes seeks to overcome the prejudice fostered by tradition, according to the objectivity afforded by a scientific outlook (cf. Brown 1976).

Voltaire's fictional work displays a blindspot that is characteristic of eighteenth-century writings on science, one which has contributed more to our contemporary view of cognitive progress than perhaps any other single factor. As keen a mind as Voltaire's was not altogether insensitive to the fact that a vital ingredient in the rise of Newtonian science was the creation of new institutional structures; i.e., science was hailed not only for its practical achievements, such as Newton's reflecting telescope, Huygens' pendulum clock, and the barometer, but also for its development of professional associations with rigorously defined goals, which replaced the informal meetings of well-intended but poorly organized amateurs. Despite Voltaire's membership in numerous scientific societies, he failed to discern that the rising citadel of Newtonian science signalled not only the repudiation of tradition in the form of Scholasticism, as Bacon had supposed, but also the establishment of a new tradition.

Although the emergence of modern science represented a remarkable feat of social engineering, Voltaire and his confreres justified the special status accorded to its products by submitting that its methods of production were universally reliable, irrespective of time or place, the nature of the inquiry, or the interests of the investigators. Science would not only unravel the mysteries of nature, but the application of its methods to human institutions and practices would finally put an end to the disorder wrought by cultural diversity.² It is in this spirit that Condorcet's monumental *Esquisse d'un tableau du progrès de l'esprit humain* of 1795 declared that political and moral injustice is occasioned by ignorance of the laws of nature and the false beliefs nurtured by the failure to reason in a scientific way. In the rational scientific method, Condorcet discerned an instrument that would "console [us] . . . from the errors, the crimes,

² The notion of progress is essentially a secular one. If human progress was contingent on the will of a benevolent entity, the notion of progress would collapse into the idea of Providence. It is this consideration that inspired Voltaire's polemic against Leibniz's contention that this is the best of all possible worlds.

the injustice, with which the earth is still polluted . . ." (Teggert 1929, p. 276). Like other eighteenth-century thinkers, Voltaire, Condorcet, and their associates were indifferent to the role of contextual factors in the development of modern science; indeed, so far as they considered contextual factors at all, they *castigated* them as sources of irrationality.

SCIENCE AS A CULTURE

The Enlightenment account of science is rooted in a putative distinction between its methods of production and judgments about the goodness of its products.³ The methods and procedures of the scientific community convey its members ever closer to achieving worthy goals (truth, knowledge, explanatory power, etc.), but they *are not responsible for the goodness of its products*; i.e., these methods do not confer goodness on the fruits of scientific practice, in the same way that a style of painting is reflected in the aesthetic value of a portrait. Indeed, in so far as science's methods of production are conducive to progress, their goodness does not depend on anything, and certainly not on any contextual factors.

The supposition that the excellence of the products of science is secured by a method that transcends the particular features of discrete societies gives rise to many well-documented problems. An especially glaring difficulty concerns the fairly innocuous contention that cognitive progress is a historical judgment to the effect that science is *moving* in a definite and in a desirable direction (cf. Bury 1955, p. 2). The problem concerns just how we are to reconcile this historical thesis with the suggestion that our human epistemic practices are cogent in so far as they are not contaminated by contextual factors. One would presume that remarkable scientific achievements, such as Newton's law of universal gravitation and Darwin's theory of evolution, are celebrated by historians because they ushered in new (and often revolutionary) ways of reasoning about nature. On the assumption that Newton was successful because he tapped into methodological criteria that transcend the bounds of particular societies, an unwelcome implication of the aprioristic rendering of science's methods is that he could have been led to discern the intellectual merit of Darwin's non-teleological rendering of human origins. This implication would appear to undermine the very historicity of Newton's ideas, because, unlike Darwin, who held that nature is constantly producing evolutionary novelties, Newton believed that the world is perfect, if not at the level of immediate experience, then at least at the more fundamental level expressed by physical law.

Evidently, more needs to be said about the artifacts produced by the scientists

³ This distinction roughly parallels the distinction between the context of discovery and the context of justification of scientific belief that is often touted in the philosophical literature, but it does not presuppose that science is geared toward the production of true beliefs about the world. Since those philosophers who support this distinction tend to dismiss contextual factors altogether, a more precise way of expressing this contrast is in order.

of different periods if we want to hold that they were more than just accidental by-products of a global recipe applied to extant theoretical and material resources. One of the more exciting turns in recent scholarship is motivated by an attempt to identify just what it is that each period contributes to its science. What has emerged is the thesis that scientific goods reflect the interests of the culture which produced them; i.e., that science's methods of production embody a host of contextual factors (gender, psychology, social position, and related factors) that are indelibly stamped on its products. Science is not opposed to tradition, as Voltaire supposed, but is merely another culture.

If we are prepared to concede that scientific products are artifacts, and not sets of statements that the rational agent would accept in any epoch, the issue is just how far we are to press their dependency on cultural practices. The relativism that haunts Voltaire's fictional writing can be interpreted *metaphysically* as a view about truth, as asserting that the very truth and falsity of the beliefs associated with science depend on the activities of its practitioners; that relativism, as Ernst Gellner asserts, entails that "there is no unique truth, no unique objective reality" (Hollis and Lukes 1982, p. 183).⁴ Granted that proponents of relativism hold this view to be true, the vexing reflexivity problems occasioned by this construal is cause for alarm: "there is no room for the assertion of relativism itself," as Gellner remarks, "in a world in which relativism is true" (Hollis and Lukes 1982, p. 183).

There are two responses to this and related worries. The first is to hold fast to the traditional supposition of the transcendence of science's methods of production; in the last fifty years or so, philosophers have shown no end of ingenuity in formulating methodologies that strive both to furnish normative advice to practising scientists and to display the entire spectrum of historical methodological practices as the successful application of their tenets (e.g., Laudan 1977 and Brown 1989). Besides the fact that this spectrum is much too rich and varied to be reduced to a simple formula, this apriorist strategy inadvertently robs the history of science of its value. One would presume, after all, that one important reason for studying its history is that science is a process of enlightenment. An important element in this process surely is the novel and unexpected ways scientists have learned to reason about nature.

An alternative approach is to interpret relativism epistemologically as a thesis about the justification of scientific knowledge, as holding that what we traditionally call knowledge is dependent on our cultural orientation.⁵ Inter-

⁴ Cf. Karl Popper 1966, p. 369ff, who asserts that relativism "is the theory that the choice between competing theories is arbitrary; since either there is no such thing as objective truth; or, if there is, no such thing as a theory which is true or at any rate (though perhaps not true) nearer to the truth than another theory. . . ."

⁵ See Paul Feyerabend 1987, p. 125, who remarks that "the validity of Maxwell's equations is independent of what people think about electrification. But it is not independent of the culture that contains them. It needed a very special mental attitude inserted into a very special social structure combined with sometimes quite idiosyncratic historical sequences to divine, formulate, check, and establish the laws scientists are using today." The epistemological relativism that I defend in this paper is consistent with this passage and, along with Feyerabend, I hold that cultural diversity is consistent with a viable notion of progress.

preted in this way, relativism is opposed to the global standing traditionally accorded to the products of science, since it suggests that they are not only a human achievement but a cultural achievement as well. The advantage of this epistemological construal is that it firmly demarcates relativism from mere subjectivism, the idea that statements are true or false simply on our say-so (see Hacking 1982, p. 49). If relativism is to present an interesting thesis about the evolution of scientific ideas, and if it is to pose more than an idle challenge to the traditional Enlightenment portrait of science, it should be cast in a purely epistemological light. The historian can hold quite plausibly that relativism makes no pretensions about the truth values assigned to scientific products, that while science's methods of production furnish a cluster of beliefs to be investigated by its practitioners, the activities of scientists do not determine the truth value of these beliefs.

Organic development furnishes a useful analogy, albeit one which should not be pressed too hard. A naive realist, who is sympathetic to the traditional notion of progress, would submit that organisms are shaped by hostile environments that weed out the many unfit variations produced by the random mutation and recombination of genes. It is the world, on such an account, that fosters evolutionary success, the activities of organisms playing no part in their survival. A metaphysical relativist would counter that organisms actually assemble their environments out of bits and pieces of nature and, therefore, that the selective pressures that mould their patterns of development are their own constructions. On this view, the world contributes nothing to organic development. The epistemological relativism which I am advancing combines features of these two accounts: it holds with the metaphysical relativist that the activities of organisms generate the possibility of evolutionary novelties and that the various candidates for evolutionary success are furnished by the activities of organisms, but along with the naive realist holds that the flourishing of some of these candidates is dictated by the way the world is. Extending this line of reasoning to science, we can hold that its products are constituted by the doings of scientists, but that their truth value (i.e., whether they flourish or not) depends on the way things are and not on the mere say-so of scientists.

The historian/relativist can hold that the products of different cultures are equivalent *so far as their methods of production are concerned* and, to this extent, that the goods of science do not enjoy the cognitive superiority traditionally accorded to them.⁶ It is at best an expression of Enlightenment enthusiasm for science to suppose that it somehow manages to avoid this post-modernist predicament. In the next section, I argue that even if science's products are on an equal footing with other cultural products so far as their methods of production are concerned, it does not follow that all cultural

6 Barnes and Bloor (1982, p. 23) construe relativism as asserting that "all beliefs are on a par with respect to the causes of their credibility. It is not that all beliefs are equally true or equally false, but that regardless of truth and falsity the fact of their credibility is to be seen as equally problematic." Accordingly, they regard relativism primarily as a *normative thesis* about how sociologists ought to explain scientific belief, rather than as I argue in this paper.

products are equally right or wrong, good or bad, true or false, as some critics of relativism declare. Indeed, on my view, the recognition that science is a culture is compatible with the claim that the beliefs of our Western scientific tradition are unique among cultural products in so far as they are progressive. To motivate this thesis, I now turn to some considerations about the disciplinization of scientific knowledge.

STABILITY IN SCIENCE

In the wake of the revolutionary upheaval in the physical sciences in this century, philosophers have taken it as a datum that an account of progress in science must presume that our knowledge of nature is unstable. Only if we presume that all scientific statements *in principle* are capable of revision can we justify the judgment that change is conducive to progress, i.e., that conceptual change ensures successively cognitively superior views of the world (cf. Hacking 1988). Two models with associated variations have been invoked to rationalize conceptual change, the idea that knowledge grows gradually through the successive modification of existing theoretical and material resources (e.g., Popper 1963), and the idea popularized during the eighteenth century that science grows primarily through revolutionary upheaval. Although these approaches differ in significant ways, both models presuppose that the instability of scientific knowledge is a necessary ingredient in any account of cognitive progress.

To motivate the judgment that change in science is desirable (i.e., that it is progressive), it seems reasonable to presume that it must be regulated by some stable mechanism.⁷ One of the strengths of the supposition that the methods of science do not change along with substantive theory is that it furnishes a stable framework for evaluating change and ascertaining whether it is progressive or not. In view of the relativist thesis that even the methods of science are cultural products, we can no longer countenance this idea. However, we still need a criterion to motivate the judgment that some proposed change represents an improvement. Failing this, there would be no argument against leaving things just as they are.

If it is not the substantive theories of science that are stable, then the question is what warrants the judgment that change in science is conducive to progress. By and large, scholars who are alive to the importance of contextual factors contend that certain features of the social organization of science are invariant throughout change, i.e., that whatever stability science has is to be explained in terms of the relationship between knowledge producers, and not in terms of the

⁷ This paper describes one factor in the stability of a system of hypotheses (namely, the relationship between its laws and the phenomena that they describe), but it does not rule out other considerations. Hacking (1988, p. 312), for example, argues that theories and laboratory equipment evolve in such a way that they match each other and are mutually self-vindicating. On Hacking's view, then, experiment and stability are closely related, so much so that laboratory stability can bring with it a certain sort of local disunity.

relationship between the products of scientific activity and the world. This brand of relativism is basically the metaphysical variety, although its proponents often feign an agnosticism about the place of truth in their account in order not to offend our realist sensibilities. The effect of this brand of relativism is that it is impossible to defend the judgment that science is progressive, unless such a judgment is interpreted as merely a *conventional* decision on the part of its practitioners.

To flesh out this allegation, one may say that the mechanism identified by metaphysical relativists as responsible for the stability of science is a *consensus* of scientific opinion. Since "consensus" is essentially a sociological expression, signifying a relation in which knowledge producers stand to one another, this approach has been exploited by social scientists who regard scientific belief as a cultural phenomenon and nothing more. On this view, we do not need to assume anything about science over and above consensus in order to explain the stability of its disciplines. One of the more vocal proponents of this approach, David Bloor, writes:

such stability as there is in the system of knowledge comes *entirely* from the collective decisions of its creators and users. It derives from the active protection of parts of the network. That is to say: from the requirement that certain laws and classifications be kept intact, and all adjustments and alterations carried out elsewhere. . . . We need not assume that a protected law or classification is singled out because of any intrinsic properties like truth, self-evidence or plausibility. Of course, such properties will be imputed to them, but this will be a justification for the special treatment rather than the cause of it. (Bloor 1982a, p. 280)

Bloor offers little by way of evidence for the thesis that closure of a scientific debate is affected by consensus of opinion, save "the fact that with no change whatsoever in their evidential basis, systems of belief can be and have been destabilized. Conversely they can be and have been held stable in the face of rapidly changing and highly problematic inputs from experience." "The stability of a system of belief," Bloor concludes, "is the prerogative of its users." (1982b, p. 305f)

Bloor is right to assert that entire systems of belief can become unglued after a time; e.g., that the transition from classical mechanics to the special theory of relativity led to the disappearance of the classical theory of the kinematics and the dynamics of solid objects. And other belief systems, such as Darwinism, were vigorously defended for many years, despite the fact that its proponents were unable to specify a mechanism for the transmission of heritable factors. It is pretty clear, however, that we simply do not know enough about the disciplinization of scientific knowledge to state with any real warrant that consensus is the only factor in the closure of a scientific debate. Moreover, there is an alternative explanation for stability in science, one which does not rely on purely contextual factors and is compatible with what we do know about the

social context of scientific practice. Since it is difficult to see how we can justify the belief that change in science represents cognitive growth if the only consideration is a consensus of scientific opinion, this alternative is perhaps our only hope for salvaging the notion of progress from the excesses of metaphysical relativism.

As against Bloor, we can hold that stability is a function of truth but still defend a relativist thesis, so long, that is, as we take relativism to be about science's methods of production and not about the veracity of its products. We could then simply hold that in terms of a given set of methodological practices, these statements emerge as true or as false. On this view, then, our methods help us to produce scientific artifacts, but they do not determine how our artifacts will fare with respect to the world. A caveat is that since a method of production produces an entire range of inter-related artifacts, an assessment of how well a given scientific artifact fares with respect to the world will involve a systemic judgment about all of its associated products, whether they be experimental devices, statements found in scientific books, methods of generating and calculating data, etc. If we call the range of products normally associated with a given disciplinary structure a belief system, this is just an oblique way of asserting the well-established view that any evaluation of a scientific belief involves all of its associated beliefs and material resources.

What I want to claim is that *some* of the belief systems devised by scientists have a feature which sets them apart from the belief systems of other cultures. It is a feature which gives science the stability required to motivate the judgment that it is progressive. The feature which I have in mind was sketched by Werner Heisenberg as follows:

the fact is that some theories seem to be susceptible of no improvement. . . ; they signify a *closed system* of knowledge. I believe that Newtonian mechanics cannot be improved at all; and thereby I mean the following: As far as any phenomenon can be described by the concepts of Newtonian mechanics, namely, position, velocity, acceleration, mass, force, etc., the Newtonian laws are also valid with absolute precision, and this will not change during the next hundred thousand years. More precisely I should perhaps say: With that degree of accuracy with which the phenomena can be described by the Newtonian concepts, the Newtonian laws are also valid. (1969, p. 135; cited by Scheibe 1988, p. 252)

On Heisenberg's view, the *stability* of the system of Newtonian hypotheses reflects a special relationship between Newtonian science and the world; i.e., in so far as phenomena can be described by the concepts of this system, its laws will be valid for these phenomena. The Newtonian system cannot be improved by modification of its guiding assumptions. Of course, experiment may disclose that new concepts are required to express some novel state of affairs. In this event, there will be some prospect for improvement, but only because *the*

old concepts are no longer applicable. Any improvement, therefore, will lead to conceptual change, i.e., to a new system of beliefs produced to explain the novel state of affairs.

Theoretical novelty can be interpreted in two ways: as a limitation of the applicability of the old belief system, or as a refutation of that system. The latter approach is embraced by scholars who have been conditioned by the revolutionary events in this century to suppose that the instability of belief is a prerequisite for justifying the judgment that science is progressive. The transition from classical mechanics to quantum physics, on this view, parallels a movement from closed systems rooted in relatively stable institutions, practices and beliefs, to open societies that subject every feature of the world to criticism. As against this approach, however, the fact remains that in some cases of conceptual change the predictions of the old belief system still hold for a limited range of phenomena. The Newtonian belief system is still valid within a limited domain, a fact which supports the first approach to theoretical novelty. Of course, we can no longer contend that the Newtonian system represents the world as a whole, but we can reasonably maintain that it captures bits and pieces of reality, that as a system it is true within a certain domain of applicability.

The advantage of this approach which is pertinent here, however, is that it yields a new way of looking at cognitive progress, one which does not violate the enthusiasm for science reflected in the writings of Voltaire and Condorcet but which is fully responsive to our post-modernist sentiments. The basis for this conception is Heisenberg's observation that science has produced a number of belief systems that are effectively closed since they allow for no improvement. Taking Heisenberg's observation a step further, I want to argue that science is unique among the various cultures in so far as some of its belief systems match bits and pieces of the world in a way that precludes further development. This position in itself does not warrant the claim that science's methods and products are conducive to progress. However, since every closure signifies the addition of a new body of knowledge, it can be reasonably held that progress consists in moving from one closed system to another, i.e., that while other belief systems no doubt change in various ways, science moves from system to system in a desirable manner. Not only does this pluralism grant the scientific community the advantage of adopting different belief systems as circumstances dictate, it also liberates this community of the need constantly to tear apart its extant belief systems as new information arises.

An advantage of this approach is that it restores some prestige to the idea that science is constantly adding to our storehouse of knowledge, an idea which has been maligned by scholars who claim that scientific knowledge is unstable. But I shall hold that it is whole disciplines that are added to this storehouse, not dislocated facts or beliefs about the world. On the other side of the coin, the suggestion that more than one belief system can be true is worrisome, but only if we subscribe to the thesis that science is converging on one grand theory, i.e.,

that the various scientific disciplines are (or should be) unified into one coherent structure of deductively interrelated parts.⁸ Rather than presume that the aim of science is to describe the one unique reality, we can just as well conceive of our various scientific disciplines as addressing different features of the world; i.e., these theories can each be true but mutually inconsistent (see Hacking 1988).

CONCLUSION

An unmitigated cognitive relativism entails that scientific products are on an equal footing with other cultural products so far as their methods of production are concerned. Our Western tradition does enshrine science, but the explanation enjoined by relativism is that we are part of a culture that has been saturated with heroic tales about the great men and women of science, and not that its products are truer, more rational, or progressive than other cultural products.

Even if we are willing to concede that science does not overcome tradition, as Voltaire reckoned, and that in this respect it is on a par with the spiritualism of the North American Indian, Eastern mysticism, and Azande witchcraft, we can still defend the thesis that science is progressive. We can reconcile a robust relativism with a viable account of progress, one which does not violate the enthusiasm for science that is the chief legacy of the Enlightenment.

In so doing, we must relinquish the myth that science's methods of production are immune to evolutionary change. During the eighteenth century, it was fairly natural to presume that the methods responsible for the success of Newtonian science would be extended to other disciplines but, then again, no one envisioned the specialization and differentiation both in method and content that would come to characterize the present state of human knowledge. We can now claim with great confidence not only that the various scientific disciplines proceed in ways specifically tailored to the phenomena that collectively constitute their *raison d'être* but also, with the benefit of hindsight, that the discovery of new ways of interacting with nature is perhaps our primary token that the entire historical process is one of enlightenment.

Although science's methods are constantly open to revision as new data emerge, it exhibits a stability that justifies the judgment that the historic movement from one method of production to the next (say, from classical mechanics to quantum theory) represents cognitive growth. While it is true that science displays the telltale signs of a culture, and to this extent is steeped in tradition, it also has given us closed systems of knowledge, such as classical mechanics, that allow us to investigate nature *as though we are not restricted by our cultural horizons*. To my knowledge, no analogue is to be found in the folk belief of other cultures. No doubt, Taoist beliefs have changed in response to environmental stimuli and interaction with the West, but there is no correspond-

⁸ See Hacking (1988, pp. 290-91) who rejects the thesis that "there is a humanly expressible, uniquely richest statement of how the world is. Realism does not demand humanly accessible unity as an ideal, any more than theism demands monotheism."

ing movement from closed system to closed system to match the historical development of scientific knowledge. As evidence for this thesis, we can point to the disciplinization of scientific knowledge; if the need arises, we can interact with the world according to the equations and theorems of classical mechanics and be confident that, within the framework defined by this discipline, there are no phenomena that will not bend to analysis. It is true that beliefs of the founders of classical mechanics were social products, but they function as *though they are absolute within the limitations inscribed by this discipline*.

This approach to the notion of progress does not completely arrest Voltaire's worry about cultural diversity. Science is no better or worse than other cultures in terms of the limitations imposed on it by the vagaries of place and time, but it does give its practitioners the liberty of investigating nature in ways that effectively conceal the cultural roots of their methods of production. We can rightly hold that this liberation represents progress, while respecting what we know about the cultural limitations of even the very best scientific belief.

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Progress and Scepticism 1789–1989[†]

MANY of the great thinkers of the European Enlightenment advanced two closely related beliefs. The first was that the societies in which they lived possessed or were about to possess properties that made them different from all other societies in history and thus distinctively "modern." The second was that these modern features gave rise in turn to a second equally distinctive aspect of their societies: their "progressive" nature. Two hundred years later we continue to believe that we live in societies that are "modern" in roughly the sense given to this word during the Enlightenment. However, we tend to doubt and in fact to be highly sceptical of the belief that modern societies are progressive.

Four deeply troubling characteristics of our century are standardly said to have provided good reasons for the rise of scepticism and disillusionment with respect to progress. The horrors of two world wars shattered the belief advanced by Adam Smith (1723–1790), Immanuel Kant (1724–1804), Marie-Jean Condorcet (1743–1794), and Jeremy Bentham (1748–1832) that modern societies tend to peace. Our experience with war and militarism since 1945 has, if anything, increased scepticism. Over thirty million have died in the hundreds of wars since 1945; enough nuclear, biological, chemical, and conventional weapons have been built and deployed to exterminate most forms of life on the planet many times over; and our militarized international relations sustain an ever-increasing arms trade. The resulting global military-scientific-industrial complex is deeply embedded in the fabric of every modern society and, as Charles-Louis de Secondat Montesquieu (1689–1755) forewarned, it seems to be self-sustaining. Further, this complex is not some pre-modern atavism, but a

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structure that involves our most advanced and modern natural, social, and military sciences.

The second set of problems that has engendered robust scepticism about progress is the wide range of ecological damage, pollution, and destruction caused by the very features of modern societies that were claimed to support the progressive control of nature. In recent years scientists working in the ecological sciences have done most to draw attention to the way modern societies squander resources and destroy rather than control nature. Third, in the so-called third world high levels of famine, starvation, and hunger, coupled with the brazen forms of oppression and exploitation, fly in the face of the predictions of Smith and Kant that the spread of modern markets and European imperialism would lead to "improvement" for non-Europeans. This feature alone has caused much of the world's population to see the belief in progress as an ideology that has served to legitimate the continued exploitation of the third world by the first. The fourth characteristic is the failure of modern capitalist and socialist societies to cope with the domestic problems that the Enlightenment claimed they were uniquely suited to solve: unemployment and poverty, debt, corruption in politics, lack of political participation, human rights abuses, violence and crime, illiteracy, and the spread of "modern" diseases such as cancer, heart disease, toxic poisoning, stress, and so on.

As Lewis Mumford concluded in his review of Charles Beard's *A Century of Progress* (1932), "progress is the deadest of dead ideas . . . thoroughly blasted by the facts of twentieth-century experience." Christopher Lasch pointed out in his recent lectures on progress that writers who still profess allegiance to progress do so as a matter of faith rather than belief, and out of fear of the consequences of giving it up rather than consideration of the evidence.¹

These four sets of problems, therefore, have given rise to a sceptical attitude to the belief in progress that has legitimated and secured allegiance to modern civilization for almost two hundred years. This predicament often leads, as we know, to the degenerative extremes of either a cynical attitude toward the modern societies in which one must live and work but which one no longer respects or admires, or to a blind and dogmatic adherence to progress in the face of our problems. Fortunately however, it also has ushered in a healthy resistance to and examination of the concept of progress in all areas of modern society. The aim of this examination has been to clarify how our belief in progress has led us to overlook, and so fail to question, those forms of modern thought and action that sustain and reproduce the four sets of problems we need to address.

There is scarcely a university discipline that has not been touched by the sceptical examination of the ways in which its procedures may rest on the uncritical acceptance of progressive assumptions inherited from the Enlighten-

¹ Christopher Lasch, "The Idea of Progress in our Time," McGill University, November, 1987. The quotation from Lewis Mumford was cited in this fine public lecture.

ment. This questioning has been most intense in the social sciences, for many of them were constituted during the Enlightenment and thus the sceptical attack seems to question their basic status as sciences. We have also seen the growth of the philosophy of science and social science as a separate discipline in which these debates are carried on. Further, scepticism itself, as an independent epistemology and moral and political philosophy, has become one of the fastest growing areas of contemporary philosophy. Finally, the broad cultural movement of post-modernism is probably best seen as an attempt to construct an ethos based on a permanent scepticism that would replace the modern ethos of progress. Indeed, post-modern writers argue that in their scepticism towards the present they are more faithful to the spirit of the Enlightenment than the defenders of progress.

The current reflection on progress is not a continuation of the longstanding debate over whether or not modern societies are progressive. This debate is a constitutive feature of modernity, from the debate over the ancients and moderns during the early years of the Royal Society, through the Enlightenment to the views of Thomas Henry Huxley (1825-1895) and Oswald Spengler (1880-1936), and on to Robert Nisbet's *History of the Idea of Progress* (1980). Since the writers in this debate use the procedures of critical reflection that are defining features of modern thought, they do not provide an independent means of questioning these procedures. Within this debate the question marks are not placed far enough down. Therefore, the current discussion of progress seeks to go one step further: to bring to light and call into question the language and forms of thought that both defenders and critics of progress share. These conventions, taken for granted in the course of the debates, are basic constituents of modern thought.

In the following two sections, accordingly, I will survey some of the major conventions of the language of progress that we have inherited from the Enlightenment. Of the many uses of the word "progress", the one that has become most common is closely related to "construction" and its cognates. Progress as construction consists in two parts: types of "development" inherent in modern societies, and forms of thinking and knowing in the natural and human sciences that are said to be characteristically modern. Modern forms of thought in the sciences are related to development in society by the application of the human sciences to administer and govern modern societies and by research, development, and application in the natural sciences. These features make up a picture of progress as the increasingly successful coordination of modern forms of thought and the rational control of natural and social processes.

This is not a comprehensive definition of progress but, rather, one picture of progress that has tended to captivate us and to elbow aside other ways of thinking about progress over the last two hundred years. It captivates us because it informs what we might call the language of progress: that is, the broad range of vocabulary and conventional linguistic usages that we, as children of the

Enlightenment, continue to employ in our thinking and acting even when we attempt to take a critical stance to progress. As Ludwig Wittgenstein commented in 1930, "Our civilization is characterized by the word 'progress'. Progress is its form rather than making progress being one of its features. Typically it constructs."²

To clarify this picture of progress, and so help us to free ourselves from its hold, I shall present synoptic historical sketches of the two sets of conventions the language of progress comprises. The first set of conventions represents progress as reform and gradual improvement. This view of progress was established in the early Enlightenment, from the mid-seventeenth century to the French Revolution. The second, progress as unintended and dialectical, was developed in reaction to the first, from the late eighteenth century to the present. Our current language of progress and the picture of progress sustained by our continued use of this language are an amalgam of these two. As we will see, even the most sceptical critics of progress tend uncritically to employ some of these conventions in their criticisms and so become entangled in the very language of progress they seek to clarify.

PROGRESS AS REFORM AND GRADUAL IMPROVEMENT

*A picture held us captive. And we could not get outside it for it lay in our language and language seemed to repeat it to use inexorably.*³

The early Enlightenment view of progress as reform and gradual improvement was developed in response to the crisis caused by the wars of religion that engulfed Europe from the 1560s to 1648. At the centre of the project of reform and reconstruction was the systematic use of techniques of sceptical doubting (inherited from the ancient sceptics and introduced into European thought by Michel de Montaigne [1533–1592]) to disengage from blind assent to custom, opinion and the dogma of religious and scholastic authorities. Adherence to these authorities was said to be a major cause of the religious wars and of the blindness to advances being made in the mechanical arts and the new, non-Aristotelian science associated with Galilei Galileo (1564–1642). Once people had suspended their assent to traditional and authoritative beliefs, they would examine them in accordance with criteria of rational assent until they reached ideas that were indubitable. These ideas would provide the foundations of knowledge on which the new natural and moral sciences would be constructed, each step being systematically examined in accordance with the criteria of rational assent. Further, the "ideas" that were assembled in this way were understood to "stand for" or to "represent" their objects. The new way of

²Ludwig Wittgenstein, *Culture and Value*, ed. G.H. von Wright, tr. Peter Winch (Oxford: Blackwell, 1980), p. 7.

³Ludwig Wittgenstein, *Philosophical Investigations*, tr. G.E.M. Anscombe (Oxford: Basil Blackwell, 1988), no. 115.

thinking, accordingly, consisted of three parts: 1) systematic and shared procedures for doubt and examination; 2) the view of rational thought as cumulative construction on foundations that had passed the test of rigorous doubt; and 3) knowledge (or ideas) as representing its object domain. All disagreements of Thomas Hobbes (1588–1679), Pierre Gassendi (1592–1655), René Descartes (1596–1650), John Locke (1632–1704), and Issac Newton (1642–1727) rest on agreement in these three assumptions.

This tripartite picture was related to the following concept of rational control. Accurate theoretical representations—of the workings of nature, of the human body and its motivational mechanisms, of human interaction, of the circulation of money and the balance of power, and so on—were to be constructed step by step and applied to reform and to improve the “human condition,” and the effects of each reform were to be monitored systematically to correct the original projection and to guide the next reform in a cumulative manner. The modern applied sciences and the human sciences of political economy, statistics, demography, education, medicine, ballistics, and psychology emerged within this general framework in the seventeenth and early eighteenth centuries, from Antoine de Montchrétien (1575–1621) and William Petty (1623–1687) to René Louis d’Argenson (1694–1757) and Claude-Adrien Helvétius (1715–1771). These applied sciences were related in turn to the efforts of early modern states to increase their populations and improve their health, and to organize and increase their production and trade. The aim of this new comprehensive government of the basic productive and biological processes of the population was to “strengthen” the state and increase its wealth so it could hold out in the commercial and military rivalry among European states. These states in turn were locked in a balance of power system and in competition for control over the resources and labour of the non-European world. The new comparative political economy, from the analysis of European states by Samuel Pufendorf (1632–1694) to the great *Encyclopédie* edited by Denis Diderot (1713–1784) and Jean d’Alembert (1717–1783), provided ever more accurate and utile knowledge of the global possessions of the European colonial systems.

The last but not least important convention of this picture of progress was the understanding of the person as a malleable *tabula rasa* or blank tablet, without any innate ideas or natural dispositions. The individual was said to acquire dispositions to think and act in habitual ways by a process of continual repetition of the activity itself. The only constant and reliable disposition of human beings was said to be a causal inclination or motive to be concerned for one’s self, that is, to seek pleasure and avoid pain. This provided a powerful explanation of human behaviour and a model for reform. Accordingly, by the judicious application of various types of pleasures and pains through rewards and punishment, an individual could be induced to engage in repetitive exercises of modern forms of thinking and behaving until these movements became habitual, and eventually pleasurable in themselves. Educational and legal reform consisted in applying these techniques to break down traditional ways of

thought and action, to inculcate the new tripartite way of critical thought and to apply it in different activities. Also included was the systematic reform of work habits in the poorhouses of early modern Europe, so the poor would grow up with settled habits of industriousness and be inured to labour. The moral and political sciences were reconstructed around the individual calculating the pleasures and pains associated with the courses of action open to her or him.

Although these conventional assumptions continue to be deeply lodged in modern thought and action, willy-nilly, they have been shown to be dubious by many of the major philosophers of the twentieth century, including Maurice Merleau-Ponty, Ludwig Wittgenstein, Thomas Kuhn, and Charles Taylor.⁴ The three-part account of knowledge rests on a straightforward misunderstanding. Our most critically reflective activity of doubting any proposition rests on the non-reflective uses of innumerable other words which are not doubted in the course of subjecting the proposition in question to doubt. Thus, our knowledge does not rest on foundations that have themselves been grounded by some doubting procedures. Rather, our doubting procedures themselves rest in a nest of judgments that are not doubted at all in the course of our enquiries. As Wittgenstein sums up this point: "All testing, all confirmation and disconfirmation of a hypothesis takes place already within a system. And this system is not a more or less arbitrary and doubtful point of departure for all our arguments: no, it belongs to the essence of what we call an argument. The system is not so much the point of departure, as the element in which arguments have their life."⁵ Further, the assumption that language is a representational medium and that knowledge consists in clear and distinct representations of what it represents has been shown to be an overly simplified account of language and knowledge. "Representing" is one thing we do with language, but there are innumerable other things we do with it, even when we are engaged in the specialized and reflective activity of representing.

These criticism from various quarters help us to see the captivating image of the knowing subject held in place by the three assumptions. It is a subject disengaged from customary and traditional beliefs, from language itself, and standing apart from the world as representer to object represented. The ascetic attraction of this god-like image of disengagement and radical autonomy has been explained in many ways. In addition, the picture of reform and improvement has been shown to contain the same view of the acting subject, disengaged from the world and standing in an instrumental relation to it as controller to thing controlled. This too has been shown to be overly simplified and untenable. Even our specialized activities in which we do exercise control always rest in and presuppose a horizon of natural relations that we do not control and on which we depend.

⁴ See Charles Taylor, "Overcoming Epistemology," in *After Philosophy: End or Transformation?*, ed. Kenneth Baynes (Cambridge, Mass.: MIT Press, 1987), pp. 464-88.

⁵ Ludwig Wittgenstein, *On Certainty*, tr. Denis Paul and G.E.M. Anscombe (Oxford: Blackwell, 1974), no. 105.

Accordingly, critics have gone on to draw attention to the limits of human knowledge and control, to stress the extent to which we are, in knowing and acting, engaged in and dependent upon language and the world. They have also turned this argument around and shown that many of our problems in theory and practice in the twentieth century derive from continuing to think and act as if we could gain this kind of disengaged knowledge and control.⁶

As important as these criticisms are, they tend to overlook one striking feature of European intellectual history. Almost all the criticisms our contemporaries have advanced were made by the major thinkers of the late eighteenth and nineteenth centuries. However, these thinkers used the very limitations of human knowledge and control they discovered as a basis on which to construct an even more Faustian concept of progress. Many of our contemporary critics, far from criticizing this new, dialectical concept of progress, continue to work within and sustain its conventions.

PROGRESS AS UNINTENDED AND DIALECTICAL

The concepts of knowledge and rational control of the early Enlightenment were criticized in the period from roughly 1780 to 1850. The concept of rational control as comprehensive reform and improvement was associated with enlightened absolutism in France, from Cardinal duc de Richelieu (1585–1642) and Jean-Batiste Colbert (1619–1683) to Simon Linguet (1736–1794) and Louis XVI, and with the mercantile system in England. Adam Smith, Condorcet, Bentham, and Emmanuel Joseph Sieyès (1748–1836) all argued that modern commercial societies with representative political institutions and the division of labour were far too complex to know or to control in this way. Indeed, they argued that the attempt to exercise this type of control failed and also stifled improvement. Progress could be achieved precisely by not attempting to bring it about as a project. Rather, progress and the wealth of nations are the unintended and unplanned consequences of leaving individuals more or less alone to pursue their enlightened self-interest in the constraints of the division of labour in civil society and representative government. On this view, progress occurs behind the backs of the agents involved, by means of a hidden hand or, as G.W.F. Hegel (1770–1831) phrased it, by the cunning of reason. Thus, the three features that most of the earlier thinkers considered essential – comprehensive knowledge, control, and habituating each member of society to work for the common good—were said to be unobtainable, unnecessary, and inimical to progress. The philosophers of the late Enlightenment and of the age of Reaction disagreed over how much coordination and invigilation was required of the autonomous processes in which mankind found itself constrained to live and work, but all agreed these were the natural limits of planning and control.

6 Fritjof Capra, *The Turning Point* (New York: Bantam Books, 1983); Carolyn Merchant, *The Death of Nature: Women, Ecology, and the Scientific Revolution* (San Francisco: Harper and Row, 1980).

As we can see in hindsight, these later thinkers simply took for granted the organized forms of thought (the scientific disciplines) and the political, economic, and technical institutions that the earlier reformers had constructed. These appeared to be quasi-autonomous processes that were tending in a progressive direction without an overall director. The political act that symbolised this transition from modern to contemporary thought was the execution of Louis XVI. The absolute monarch, who stood above the law, was replaced by the republic, in which everyone was equally subject to the laws of politics, economics, and science, and to the division of labour, and was moved in a progressive direction by this very subjection.

The theorists went on to show how the conditions over which humans had no control were moving them, in spite of themselves, in a progressive direction. Individuals caught up in the dependency relations of the market—which automatically rewarded economically rational behaviour and punished irrational behaviour—would gradually become disciplined, polished and enlightened, without the need for moral education. Their selfish pursuit of unlimited wants would bring about the greatest good of the greatest number. As markets spread around the globe, governments would become economically interdependent and war would no longer be in their self-interest. Even wars would lead unintentionally to peace. Citizens, experiencing the cost and destructiveness of war, and thinking only of their self-interest, would curb military spending and adventurism through a free press and representative government. Thus, as Kant was able to sum up this whole line of thought in *Perpetual Peace* (1795), supposing humans to be devils, the unintended consequences of their dialectical unsocial sociability were leading them to scientific and material progress and to perpetual peace.

These progressive thinkers did not stop at grounding the mechanisms of progress in the institutional structures of modern societies. Charles Darwin (1809–1882) claimed to find such a mechanism in the natural world. Further, all of human history was understood as an unplanned progressive development passing through four stages. Since no other society in recorded history has ever understood itself in the terms of progress, but, rather, usually in the natural cycles of growth and decay, historical progress was said to occur behind the backs of the people involved. This entrenchment of progress in a fundamental historical process proved attractive to the generation of philosophers who grew up in the age of Reaction after the French Revolution. The failure of the Revolution and the Terror were seen to be the result of sweeping away the traditional structures of French society and the imposition of abstract reform. This enabled critics as diverse as Edmund Burke (1729–1787), Joseph de Maistre (1753–1821), Hegel, Claude-Henri Saint-Simon (1760–1825), Isidore Auguste Comte (1798–1857), and Karl Marx (1818–1883), to interpret the Terror as the consequence of the earlier movement of progress, and to criticize it for its lack of historical and sociological understanding. Moreover, with their new historical and dialectical language of progress, this was an

exercise in replacing one concept of progress with another. They could thus criticize the excesses of the Revolution, and indeed the whole "slaughter-bench" of history, yet situate it as a necessary step in the progressive development of humanity.

This form of argument was shared by conservative and radical alike. Marx, for example, argued that the immediate unintended consequences of capitalism were regressive rather than progressive but that the consequence of these consequences was the unplanned development of the conditions for the overthrow of capitalism and progression to socialism. In this "master-slave" dialectic, the unintended consequences of human action create and sustain the social and historical conditions that enslave mankind, but the overall tendency of this self-imposed "subjection" is the progressive development of the human species in spite of itself. At its most optimistic, the belief is that the mechanisms of progress will gradually produce a human animal capable of knowing these mechanisms and bringing them under a new and comprehensive form of rational control. From Condorcet's *Esquisse d'un tableau historique des progrès de l'esprit humain* (1795) to the latest cybernetic model of humans' place in society and nature, this utopian rationalization of present ills in the terms of their alleged future, progressive benefits knows no bounds.

The form of thinking characteristic of this dialectical concept of progress contains, in addition, two features not present in the earlier, tripartite conception. The first or "critical" feature is to ask of any claim to know or to doubt, what are the "conditions of possibility" for making such a claim or exercising such a doubt. This reflective step was employed to criticize the earlier view of knowledge by showing that there are background conditions for our reflexive activities of doubting and representing. The step, however, generates a paradox for two reasons: we are both the knower and the known, the subject and object of knowledge, and we claim both that our knowledge is limited and that we can know these limits. The paradox, or "dialectical of finitude," as it is often called, appears in the sciences that were developed in the nineteenth century on this form of thought: the attempt in the empirical sciences to account empirically for the transcendental conditions of possibility of the empirical field; in hermeneutics to make explicit the implicit horizons of explicit knowledge; and in phenomenology, to grasp conceptually the conditions of embodied or pre-conceptual knowledge.⁷

The second feature is the attempt to find some way to overcome the paradox. As we have seen in the new social theories, the sociological and historical conditions of possibility of human action were said to have a progressive bent. In an analogous manner, the solution was to claim that the epistemic conditions of knowing contained a dialectically progressive tendency. From Kant and Hegel through Friedrich Nietzsche (1844-1900) to Jürgen Habermas, this

7 Michel Foucault, *Les Mots et les choses* (Paris: Editions Gallimard, 1966), tr. *The Order of Things. An Archaeology of the Human Sciences* (translator not named) (London: Tavistock Publications, 1970), pp. 312-35.

feature has taken a variety of forms. It standardly involves the claim that, due to historical development, the present generation can see more clearly into the underlying conditions of human knowledge. For Habermas, tendencies to truth, rightness, and sincerity are built into the use of language and these are uniquely transparent to moderns. In the hermeneutical or interpretative sciences we are told that the condition of possibility of interpretation is an underlying inclination to clarity and truth. Even the sceptical Nietzsche posited, as the ground of his hermeneutics of suspicion, a natural drive of self-overcoming (*selbstaufhebung*). Thus, the first step is used to expose and criticise the unclarity, error, immorality, and insincerity of the age, whereas the second step claims to discover an underlying tendency to progress, as one stage or paradigm is typically said to correct and supersede in a more comprehensive form an earlier one.⁸

This language of progress as unintended and dialectical is deeply woven into contemporary ways of thought and action. Rather than replacing or superseding, it has become grafted on to the earlier language of progress as reform and gradual improvement. Thus, positivists and dialecticians from the Vienna Circle and the Frankfurt School, tend to play the conventions of one language of progress against the other in an interminable twentieth-century debate on progress.

Over the last twenty years post-modern critics have subjected dialectical progress to extensive investigation and refutation. The most influential post-modern scholar has been Jacques Derrida, who initially applied his "deconstructive" criticism to the work of one of the most important philosophers of science in the twentieth century, Edmund Husserl (1859–1938). The broad generalizations about the progressive tendencies of the unintended consequences of our scientific, industrial, military, and political institutions have been refuted by the four sets of problems mentioned above. The prevailing belief that knowledge develops in the natural and social sciences by one theory or paradigm superseding and comprehending its predecessor has been shown to be question-begging and inconclusive. Post-modern critics have exposed this dialectic of progress in all areas of our thinking, from the way we conceptualise scientific research and development and the way we organize the world into developed and developing nations to learning theory and the way we think about history. They have gone on to "deconstruct" this last "meta-narrative" of the Enlightenment. The cumulative effect of these criticisms has been to suggest that the progress the dialecticians claim to discover is rather a feature of the language they use.

The new post-modern sceptics have shown how we have become entangled in and bewitched by these two language games of progress over the last two

⁸ For a recent example of these two features, see Alasdair MacIntyre, *Whose Justice? Which Rationality?* (Notre Dame, Indiana: University of Notre Dame Press, 1988), pp. 349–69.

hundred years. However, their way of thinking continues the most destructive features of both conceptions of progress. In criticising the limits imposed on our thinking by progressive assumptions, they assume that the only rational response to any limit or convention is to deconstruct and to overcome it. They see themselves as engaged in the endless task of "overcoming" or "overthrowing" self-imposed limits. Thus, any use of the word "natural," "limit," or "foundation" needs to be exposed as something imposed by us and constraining us in what is essentially a wholly contingent universe, self, and society, open to infinite interpretation and manipulation.⁹ They thus combine the radical contingency of the first view of progress with the ethics of overcoming of the second (without its progressive faith).

I scarcely need to say that this post-modern way of thought and action is not what we require today. Its activity of deconstruction is simply the reversal of the prevailing picture of progress as construction. We need a way of thinking that continues the best traditions of critical thought, not only from the Enlightenment but also from a much more cosmopolitan range of sources, in order to continue this careful task of self-criticism of our reigning forms of critical thought. Moreover, as ecological and feminist scholars have stressed, we require a way of thinking that is able to recognize and to affirm the limits of our knowledge and action and the extent of our dependency on the natural world. Rather than a mistaken picture of our control *over*, we surely need to recover a sense of our appropriate place *in* the universe, which the Enlightenment swept away as a pre-modern superstition. As an increasing number of people have sought to remind us, we are one species among millions on an interdependent and fragile planet. And we are in a universe that was not made for us and that will long outlast our inevitable passing.

A line of argument that might lead in this direction is the current questioning of two further conventions of both conceptions of progress. These conventions, perhaps more than any others, cause us to overlook the complexity of what we are trying to understand and to assume a disengaged and transcendent viewpoint. The first is the widely held assumption that understanding consists in having a comprehensive theory, which sets forth the essential features of the phenomenon in question. In the *Philosophical Investigations* Ludwig Wittgenstein showed that this is a mistaken conception of understanding.¹⁰ Any phenomenon we seek to understand is too complex to be grasped in a general schema which purports to lay out its essential features, because instances of a general phenomenon do not have the common and essential features this view presupposes. Rather, to put it negatively, they have complicated and overlapping similarities and relationships. If so, understanding cannot consist in possessing a general theory. It involves, rather, surveying and paying careful

⁹ A good example of this line of thought is provided by Richard Rorty, *Contingency, Irony, and Solidarity* (Cambridge: Cambridge University Press, 1989), Part one.

¹⁰ Wittgenstein, *Philosophical Investigations*, nos. 65–97.

attention to the examples, and thus gradually acquiring a familiarity with them and their complex relations with one and another.

Let us take progress as an example. I have presented a brief survey of two examples of progress and drawn your attention to their similarities and dissimilarities. There are numerous other examples of progress and no one could claim to know what progress is until they had become familiar with additional samples. Moreover, a general theory of progress would necessarily overlook the complexity of my two examples, and a *fortiore* the complexity of other examples, by treating a small number of features as if they were essential to and definitive of every instance of progress. A theory, by representing progress in this way, would thus cause us to overlook and therefore misunderstand the very phenomenon we seek to understand.

We can see that many of the sweeping generalizations that the great progressive thinkers put forward about the essential nature of knowledge, reason, science, society, history, and, of course, progress itself, were based on this mistaken view. Unfortunately, many of the critics who have picked out errors in the earlier theories continue to construct even more abstract and misleading theories. Recently, for example, philosophers of science have put forward one theory after another of the essential nature of science. Critics such as Paul Feyerabend have demonstrated that for each theory of the essential rules of any science there is always a decisive counter-example. However, sharing the same assumption as their opponents, some critics (but not Feyerabend) have gone on to conclude that since science conforms to any of the sets of rules or schemata advanced by the philosophers then it is not a rule-governed activity at all: anything goes. If they would abandon their common misconception, as Wittgenstein and Thomas Kuhn recommend, they could go on to survey the numerous examples of science available to them, to become familiar with the various and irreducible ways in which science is a rule-governed and non-anarchic activity, and thereby come to understand what science is.

Of course, we can always construct a theory or a generalization if we wish as long as we remember that it serves the limited and heuristic purpose of throwing light on a small number of features of the phenomenon at the expense of obscuring all others. Therefore, whereas the misidentification of understanding with theory directs us away from the multiplicity of the world and towards abstract and procrustean representations of it, Wittgenstein's argument directs us toward attention to and wonder at its irreducible diversity and our relations to it.

Wittgenstein complemented this with a second line of argument that I have used in my analysis of the two concepts of progress. All our enquiries, no matter how reflective and critical, always take place within some ways of thinking and acting that are taken for granted and not questioned. Being engaged in these "language games" or "forms of life," as he called them, does not impose some limit that needs to be deconstructed and overcome, nor does it render our knowledge defective in any way. The correct attitude, accordingly, to this

prosaic and natural feature of the way we are in the world is acceptance: "what has to be accepted, the given, is—so one could say—*forms of life*."¹¹ (He does not mean that we must accept any given form of life, but that questioning a given form of life involves the acceptance of others and not a transcendental standpoint.) As we have seen, the Cartesian activity of radical doubt—of the earlier conception of progress – overlooked the non-reflective and unquestioned forms of thinking and acting with words in which it was indeed grounded. Although the post-Kantian thinkers were able to see this error in their predecessors, they mistakenly claimed that their own reflective activity of making explicit the unquestioned conditions of any claim to know was itself free of such conditions. Yet, their forms of reflection rested on and took for granted a whole range of conventions of the progressive form of life in which they thought and acted. Wittgenstein argued that the progressive forms of expression I have surveyed in this essay caused these great thinkers, and continue to cause us, to overlook and misunderstand the forms of life in which we are naturally engaged in all our reflective activities, and thus to struggle against the natural way we are placed in the world as if it were some limit to be overcome.¹²

We are just beginning to appreciate the full significance of these two lines of argument. However, if we are to have a future in which we are able to address the four sets of problems that confront us, we shall need to clarify and to set aside the conventions of the old language of progress that cause us to overlook and to perpetuate the activities that give rise to these problems. Hence, it seems that these two arguments will be as central to such a future as the arguments of Descartes and Kant were to the old age of progress. And, if we are fortunate enough to modify our destructive forms of life in time, there will be a different sense in which it will be right to call this future an age of progress.¹³

¹¹ Wittgenstein, *Philosophical Investigations*, p. 226 and no. 23.

¹² Stephen Hilmy, *The Later Wittgenstein* (Oxford: Blackwell, 1987), pp. 190–227.

¹³ This paper is dedicated to Professor Charles Taylor, F.R.S.C., of McGill University, who was unable to attend the Symposium.



The Idols of Technology[†]

STANDING at the threshold of modern times, Francis Bacon saw in experimental science and technological innovation the keys to humanity's future. Human history to that point, he thought, was an endlessly repeated cycle of despair and false hopes. The false hopes were fed by the old illusion that a few cheap tricks and the right magical formulas would unlock nature's treasury where unlimited wealth and power lay. The despair arose from humanity's seeming inability to escape from subjection to the natural forces that periodically visited famine, disease, pestilence, and destruction upon it. And that despair was perpetuated by established religion, with its fondness for handing out apparently endless punishments to Adam's descendants for the crimes committed in Paradise so long ago. The theologians of the day regarded these sinners as having already at their disposal quite sufficient means for doing mischief, and so viewed as alarming and inadvisable the prospect of an enlarged human technological capacity.

And there was another source of despair: the routines of society and politics. To Bacon, society offered the depressing spectacle of equally undeserving sycophants competing for the available insignia of honour and preferment, along with the right to squander frivolously their disproportionate shares of the far too limited stock of material wealth. Politics was for him what we call today a "zero-sum game," where any person's success in advancing to greater power and influence inevitably was in direct proportion to his or her capacity to ruin

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someone else's fortunes in equal measure. These wastrels and experts in bureaucratic maneuvering were so attentive to the business of enhancing their own shares of the available spoils at the expense of others that they had no time to devote to enlarging society's economic product as a whole.

Bacon was obsessed with the idea that all this could be changed, and so simply, if only society's rulers could be persuaded to champion his project for the conquest of nature by promoting the mechanical arts. He despised the condescending attitude toward the experimental sciences that pervaded the intellectual establishment of his day, and he tried to shock his contemporaries out of their complacency by insisting that the human mind, as well as human hands, required adequate technological "instruments and machinery" for its work.¹ These comments introduced his great book, *The New Organon; or, True Directions concerning the Interpretation of Nature* (1620), in which Bacon tried to identify the obstacles that blocked the way to a scientific approach to the understanding of nature.

BACON'S IDOLS

Those obstacles were epitomized in four types of "idols." For Bacon, the idols are "false notions which are now in possession of the human understanding, and have taken deep root therein," which work actively against a true understanding of scientific method—a remarkable anticipation of the later concept of ideology.² The "idols of the tribe" stem from the inherent, universal structure of the human mind, such as the limited range of our senses, the tendency to draw conclusions from insufficient evidence, and a search for certainty in areas where there is no reasonable basis for it. The "idols of the cave," on the other hand, arise from particular forms of culture and education, which frame the outlooks of individuals and are expressed in particular prejudices; these cultural "blindnesses" strongly influence our perceptions of events and channel our understanding of the world in ways designed to reinforce the hegemony of approved traditions.

The "idols of the marketplace are the most troublesome of all," Bacon says. These errors, hidden in our languages themselves, come from the conventional usages of words as they evolve over time. Habitual modes of expression, which reflect the past experiences of generations, are applied to new situations, and people using those expressions cannot see that the words they are using do not really describe the events to which they are being applied. Finally, the "idols of

1 J.M. Robertson, ed., *The Philosophical Works of Francis Bacon* (London: Routledge, 1905), p. 257. See William Leiss, *The Domination of Nature* (New York: Braziller, 1972), chap. 3.

2 The four idols are set out in Sections 38–68 of *The New Organon*, in *Philosophical Works*. There is a contemporary parallel in the literature on "risk perception," in which various types of popular misunderstandings of the nature of current environmental risks have been categorized. For example, see the exposition and references in Vincent Covello, "Informing People about Risks from Chemicals, Radiation, and other Toxic Substances: A Review of Obstacles to Public Understanding and Effective Risk Communication," in W. Leiss, ed., *Prospects and Problems in Risk Communication* (Waterloo: University of Waterloo Press, 1989).

the theatre" are the false notions that are perpetuated by the great systems of thought, especially religion and philosophy, that happen to become predominant in particular cultures and spawn dogmas which resist questioning and attempted refutation.

In his utopian fantasy, *The New Atlantis*, Bacon imagined a setting in which the obstacles to his program existing in his times would be swept away completely. But even Bacon would have been astonished and made a little uneasy, I think, at the prospect that within a few centuries Western society would be driven by purely secular ambitions and would elevate experimental science and technological innovation to so privileged a position in its pantheon of public values. The great triumphs of science and technology are among the most cherished accomplishments of the modern age; and in ironic reversal, they are also the sources of some of our new idols.

A MODERN IDOLATRY

Our idols of technology are the false notions that have grown up around modern society's fervent commitment to technological progress. In the first place, the sustained successes in technological innovation throughout modern times have given rise to characteristic systems of thought in which are embedded our own "idols of the theatre." In such thinking we are given the impression that modern conditions compel us to bring our values and institutions into conformity with the nature of those technologies themselves. We encounter statements to this effect all too frequently, for example in discussions about the coming of the so-called "information society." One Canadian federal government report on this subject states with a flourish that "the advent of microelectronics is rapidly and irreversibly leading to a major and fundamental transformation of western society."³ This is a good example of what may be called "technological hyperbole," which is the systematic and unwarranted exaggeration of the general social effects that may be expected from introducing new technologies. It is often matched by "technological fetishism," which consists in making far too much of the specific characteristics of new technologies themselves, as if they could be expected to wreak magical transformations in our lives.

Second, there is the notion that our commitment to science and technology itself marks a qualitative break within all previous human history, which beguiles us into thinking we are now immune from the "superstitions" that ruled older civilizations. What misleads us here is that our everyday language has become so saturated with technical jargon and scientific pronouncements that we pay too little attention to the autochthonous drives, expressed in the fear and hatred of peoples and customs different from our own, still humming deep within us. So the attempt to devise one of the very latest and most complex

3 Arthur J. Cordell, *The Uneasy Eighties: The Transition to an Information Economy*, Background Study 53, Science Council of Canada (Ottawa: Ministry of Supply and Services, 1985), p. 133.

technologies imaginable, the so-called "strategic defense initiative" (better known as "star wars"), which if it could work as planned would be a triumph of human ingenuity, was announced by the same political leader whose discourse at that time also told of his implacable determination to overcome the forces of an "evil empire." This deceptive quality of our everyday language expresses well our own set of the "idols of the marketplace."

Third, there is the idea that every technological breakthrough is a triumph for humanity in general, and thus that we do not have to worry about the actual distribution of costs and benefits that attend its utilization. Those who are actually affected by the introduction of new technologies traditionally have not been called to give evidence on its consequences, and we hear only about general increases in economic productivity and social welfare. This is especially true when, because of the structure of international trade, the benefits are confined largely to the innovating country and major negative impacts are felt among nameless regions abroad. In this pervasive dissociation of the intrinsic characteristics of techniques themselves, on the one hand, and the actual short-term social impacts that result from their uses under existing institutional arrangements on the other, is found our own set of the "idols of the cave."

And fourth, the undeniable achievements of our modern science and technology, and their clear superiority over every earlier human approach to the investigation of natural forces, soon gave rise to an attitude of arrogant superiority toward all other ways of interpreting the human experience of the surrounding world. Beginning in the seventeenth century this "scientism" first set about stamping out its competitors among other systems of natural philosophy, and already by the nineteenth century it had turned its scorn on traditional religious, social, and ethical paradigms: the "scientific method" would suffice, it was claimed, as the sole "rational" approach to any and every question of values, social justice, and ultimate meaning. Scientism remains a lively and forceful part of our intellectual landscape, and the various modes of its expression represent our own set of "idols of the tribe."

Through the idols of technology we are led to believe that, if we hope to extract the collective benefits from new technologies, we shall have to make certain changes in the way we behave, changes that we might not wish to carry out did we not feel compelled to do so. This vague sense of subjection to forces beyond our control is indeed the combined, overall effect of the four types of contemporary idols of technology. Since the promised benefits from technological progress can be substantial indeed, we are left with the impression that we are under technology's thumb, so to speak.

The belief that we are under pressure from the technological imperative cannot be just dismissed as a simple-minded mistake. The scope and pace of technological change has been and remains a looming presence among us, its relentless march throwing up new problems while the older ones are still being apprehended and long before they have been addressed at all adequately; and our awareness of this pressure is compounded by our realization that no

individual industrialized nation can insulate its existing share of economic wealth against continued challenge from innovating forces elsewhere on the globe. The common mistake is not in thinking that such pressure exists, or in believing that it is heavy (for it is), but in holding that our institutional responses to it are somehow predetermined and thus cannot be guided by choices grounded in enduring values.

The history of the modern era may be taken as a case study about our collective fascination with the products of scientific and technological innovation—and about our inability to exorcise our persistent anxiety over whether those products can lead us into the promised land of universal abundance and contentment. We have dreamt of how complete mastery over the environment will spring from our science and its instruments, with all matter and energy harnessed to our desires, and finally with the capacity to engineer life itself, putting the evolutionary fate of all existing species, as well as new ones designed to our specifications, at our disposal.

We also have recurring nightmares about those instruments, nightmares in which inexplicably we lose control over the process of technological change, in which our instruments appear to take on a life of their own and lead us to a place where things are not at all as we expected, or desired, and moreover where there are no markers showing us the way back. I understand these fantasies about autonomous technology to be metaphoric, deriving from the paradox of control with respect to the relation between humanity and nature. The instrumentalities furnished by modern science and technology, which finally appeared to realize humanity's long-sought mastery over its external environment, turn the species' own lack of self-control into the means for an orgy of environmental degradation and intraspecies violence that threatens its own viability.

BACON'S WAGER

Francis Bacon urged his contemporaries to take a chance on the immense benefits sustained technological innovation would bring to society as a whole. He acknowledged there was a risk that the enlarged human powers won through artful control over natural forces could be used for destructive or mischievous ends. But, he argued, the scale of the risk paled in comparison with the immensity of the promised benefits, and thus it was a risk well worth taking. Besides, there was a good way to manage the risk: in a famous passage in *The New Organon*, he reassured his readers that "sound reason and true religion" would guarantee that the exercise of human power over nature would be carried out responsibly.⁴

Over the ensuing centuries established religions were displaced in industrialized societies as guarantors of responsible behaviour in such matters. Instead the effort to manage the risks stemming from technological applications has

4 Francis Bacon, *The New Organon*, in *Philosophical Works*, p. 301.

been internalized within the interactions between science and society. In a number of important senses, managing the process of technological innovation in modern industrial societies is nothing but the assessment, communication, and management of risks. Through an understanding of the nature and consequences of risks, governments, businesses and the public seek to monitor and control those industrial products and practices that are potentially harmful to human health, the well-being of other species, and ecosystem functions. These attempts are classified under a variety of headings, the most commonly used being risk assessment or risk analysis, risk perception and acceptable risk, risk communication, and risk management.

Managing the risks associated with technological innovations in practice means both government and individuals making difficult choices on highly complex matters. Industries, regulatory authorities, and citizens must determine levels of acceptable risk for environmental and health hazards—for instance, those caused by toxic chemicals. They do so through such operations as choosing appropriate extrapolation models to estimate human health risks on the basis of animal test data. All these parties must also make choices about how to balance estimated health and environmental risks against the estimated economic and social benefits to be derived from using toxic chemicals, in full knowledge of the likelihood that new information accumulated in the future will show that certain earlier choices were incorrect.

For members of the public, managing the process of technological innovation means making choices about the truly bewildering array of risks present in industrial societies, both voluntary (such as smoking or skiing) and involuntary (such as airborne lead or occupational hazards). Some entailments, among many others, are deciding how to regulate one's exposure to voluntary risks, how to rank risks in relation to each other, and deciding how much governments should regulate hazardous products and processes and should spend on reducing risks associated with them.

During the first few months of 1989, for example, there were significant public controversies in North America about a variety of health and environmental risks. There were widespread reports of contamination of food supplies by pesticide residues, leading to estimates in the daily press of a significant number of additional deaths from cancer for the population as a whole. There was a controversy over a chemical (alar) used as a growth regulator for apples, even more animated because the focus of debate was on the possibility that children were especially at risk because of their heavy consumption of apple juice. And the massive Alaskan oil spill highlighted the risks of catastrophic environmental damage to animal species and economic losses to fisheries industries.

THE CENTURY OF ENVIRONMENTAL CRISIS

As the twentieth century draws to a close, the endemic struggle for political domination among land-based empires, which reached truly global dimensions

in the Second World War, appears to have run its course, having been stymied by the very technologies of destruction it brought into being. The entertainments afforded to military bureaucracies by localized conflicts remain, but only the most sanguine warmongers among us believe that there will be anything left salvaging after general nuclear weapons exchanges.

We stand at the threshold of a new era which will be marked by environmental crises on a global scale. Some of them will be a function of pressures on environmental resources from a larger human population in the so-called economically underdeveloped world: in China and elsewhere, they will face the bitter truth that they have no hope of escaping the age-old scourge of inadequate satisfaction for basic needs via the route mapped out by the richer nations, namely by squandering fossil fuel energy and dumping their wastes wherever they choose. Other crises will stem from the accumulated global residue of centuries of earlier industrial development and environmental degradation—atmospheric pollution, toxic chemical wastes, climatic change, massive deforestation, loss of fertile soil, radioactive wastes, reduction of biotic diversity, ocean pollution, and contaminated freshwater supplies. These and other hazards will be the inescapable reality of everyday life in the twenty-first century.

Moreover, many of these threats are on such a massive scale, and have such momentum driving them, that *no* action we take now, no matter how drastic, and no existing or foreseeable political or technological remedy, no matter how sophisticated, can forestall their irresistible magnification. Nothing can stop the destruction of tropical forests in the near future, and we shall be fortunate to preserve a few specimens here and there for tourist attractions. If by some miracle *all* manufacture and uses of chlorofluorocarbons (CFCs) were halted today, the migration of CFC compounds already present at lower atmospheric levels to the upper atmosphere, and their destruction of ozone there, would continue for decades to come. Our existing technologies around the world are hooked on fossil fuel energy sources, and no amount of alarm about global warming can cause an appreciable reduction in fossil fuel use for many years.

In confronting such problems we will find that the risk assessment and risk management strategies we have in hand are, by and large, quite accomplished techniques for addressing very specific problems, one at a time, that are limited in scope. (For example, an estimate of the risks and benefits of a particular pesticide, considered all by itself, where reliable test data results have been obtained, and assuming that it will always be used in carefully controlled applications by persons who will take the required safety precautions.) Even here we must note that such risk estimates will always carry a measure of uncertainty, and that there may be later evidence of environmental or human health hazards that were unforeseen because of our incomplete knowledge.

But in the coming century of environmental crisis we will be faced with many problems that do not have such neatly structured dimensions. The solutions we possess or can devise are mostly for single problems, but there are undoubtedly a host of synergistic effects among toxic agents of which we are only dimly

aware. We can do nothing about some of the dangers that are painfully obvious, owing to the inherent momentum in current uses described above. Above all, many of our incipient crises are spread across nations whose economic, social, and political situations diverge sharply, and there are few grounds for being optimistic about forging a common front against them. Bitter complaints about international inequities attend every international conference on global environmental issues.

At some point, I suspect, we shall be brought to the brink of collective despair about the trajectory of modern civilization and the paradox of control in the relation between humanity and nature that it set before us. The scientific and technical instruments themselves will be denounced, often and loudly, as the chief villains of the piece. There may be calls to begin the trek back across the historical threshold where Bacon stood and offered his wager.

If so, one must hope that wiser voices will prevail and be heard to say that only the hand that inflicts the wound can heal it (as I believe Hegel said). We shall need every ounce of technological ingenuity and scientific understanding to pull us back from the abyss of irremediable environmental disaster. But there is no hope of healing so long as the illusion persists that those instruments themselves can bring about the harmonization of human interests.

C'est la faute à Voltaire ! C'est la faute à Rousseau !†

DANS LE PENSÉE CONTEMPORAINE, la référence à la notion de progrès a plusieurs caractéristiques qu'il importe de souligner avant d'engager la réflexion sur certaines de ses apories. Tout d'abord, et c'est là sa caractéristique la plus évidente, la référence à la notion de progrès est omniprésente dans les débats touchant la vie individuelle et collective. D'un point de vue éthique, et en dépit ou à cause de la pluralité des valeurs, la référence au progrès est même une référence obligée, pour ne pas dire le paradigme de toute référence éthique. Quelles que soient la situation à l'étude et la valeur à l'étalon de laquelle on procède à son évaluation, la référence au progrès s'impose comme relais axiologique vers un avenir qui serait meilleur.

De ce point de vue, la sémantique du terme « progrès » est significative car elle inscrit dans ses divers sens un ensemble de connotations qui sont nécessairement positives : parler de progrès, c'est toujours prétendre parler de quelque chose qui va dans le sens d'un mieux. Et quelles que soient les divergences sur ce qui, dans la vie individuelle ou collective mérite une telle description, la référence au progrès demeure axiologiquement positive, au point d'avoir remplacé la référence à ce que jadis on appelait « le bien. »

La raison d'une telle substitution est conceptuellement péremptoire, même si en apparence elle semble contredire le proverbe selon lequel « le mieux est souvent l'ennemi du bien. » Car pour opposer le mieux au bien, il faut disposer d'un ensemble de critères distincts permettant d'associer le progrès et à l'idée du mieux et à l'idée du bien. Or, un double phénomène commande ici une attitude relevant du réalisme éthique. D'une part, la pluralité des valeurs, voire leur relativité, interdisent l'identification du progrès à une valeur unique dont

* Département de philosophie, Université de Montréal.

† Présenté au colloque « Le progrès, » Université Laval, le 6 juin 1989.

on pourrait dire dans l'absolu qu'elle est « le bien. » D'autre part, la notion de progrès commande néanmoins de parler de l'évolution des individus ou des sociétés d'une manière axiologiquement positive. S'impose alors la référence au « mieux, » d'autant plus nécessairement que sa connotation comparative et modérée écarte alors tout dogmatisme, qu'il s'agisse de la valeur au nom de laquelle on prononce sur le progrès ou de l'importance proclamée du chemin parcouru dans sa direction.

En ce contexte, invoquer le progrès comme référence éthique, c'est invoquer un étalon marqué de concession, voire de compromis. C'est refuser, en tous cas, de faire de l'idéalisme éthique la condition du discours moral. À défaut de s'entendre sur ce qui constituerait « le bien, » le progrès s'impose alors comme paradigme éthique, étant entendu que c'est le bien, donné dans l'absolu, qui en contexte relativiste serait l'ennemi du mieux.

La seconde caractéristique de la référence au progrès découle de la première, car par son ouverture à une pluralité possible de valeurs et de situations, le terme de « progrès » est nécessairement marqué d'une polysémie apparemment insurmontable. Ceci est vrai sans doute des valeurs qu'il véhicule et des situations hétérogènes auxquelles on les applique, c'est-à-dire des objets auxquels s'étendra l'aire sémantique du terme « progrès » dans sa connotation positive. Mais la polysémie du terme de « progrès » dépasse largement ce champ. C'est jusque dans les modèles décrivant le parcours de ce qui, dans le progrès, relève spécifiquement de sa connotation positive que l'on trouve une polysémie défiant toute classification.

Tour à tour associé à l'idée d'avancer, à celle de se répandre, à l'idée d'évoluer, de monter, de s'approcher d'un but, voire de se développer, le progrès renvoie à un ensemble ouvert d'itinéraires possibles. Ceci comporte une double implication. D'une part, et dans son sens éthique, le progrès est irréductible à l'une ou l'autre des trajectoires que l'on associe à son nom. D'autre part, et toujours dans son sens éthique, le progrès désigne un coefficient positif par-delà leur classification.

De ce point de vue, la sémantique du terme « progrès » est encore une fois significative car elle opère axiologiquement comme une méta-catégorie. Ce qui est propre au progrès, ce n'est pas, par exemple, le fait d'avancer en ligne droite, de gagner du terrain, de s'élever vers le haut, d'allonger son parcours ou d'augmenter sa mise. Ce qui est propre au progrès, c'est qu'en privilégiant l'une ou l'autre de ces trajectoires, on soit en mesure d'affirmer que la modification qu'elle implique ira dans le sens d'un mieux.

La troisième caractéristique de la référence au progrès devient dès lors remarquable, c'est-à-dire la facilité avec laquelle la pensée contemporaine oppose le progrès moral au progrès tout court. La figure emblématique de cette dissociation se trouve dans la manière dont on discute des modifications individuelles ou collectives en insistant sur le fait que le progrès matériel n'est pas synonyme de progrès moral. S'opposent ici l'idée d'un « plus » et l'idée d'un « mieux » d'une manière décisive, étant entendu que faire plus gros, plus grand, plus haut, plus vite, plus fort ou plus efficace n'est pas synonyme de faire

bien ou même de faire mieux. Et dans la mesure où le progrès matériel est associé au développement des sciences et des techniques, dans la même mesure c'est le progrès scientifique ou technologique que l'on oppose alors au progrès moral.

L'OPPOSITION DU PROGRÈS MATÉRIEL ET DU PROGRÈS MORAL

Dans cette opposition du progrès matériel et du progrès moral, le phénomène le plus révélateur n'est pourtant pas sa reconduction apparente des dualismes classiques de la matière et de l'esprit, des moyens et des fins, voire de la quantité et de la qualité dans la notion de progrès. S'il en était ainsi, les débats sur le progrès opéreraient à la manière d'une opposition simple où le critère invoqué permettrait directement d'extirper du *sens* du mot « progrès » l'ensemble de ses antonymes. Mais ce n'est pas ainsi que fonctionne l'opposition entre le progrès moral et le progrès matériel.

La critique la plus percutante du progrès matériel ne réside pas, en effet, dans l'allégation selon laquelle ce dernier ne serait que recul, décroissance, déclin ou décadence. Elle ne réside pas, en d'autres termes, dans le refus d'appliquer le terme de « progrès » à ce qui est réputé relever de l'aire sémantique de son antonyme. Elle réside surtout dans l'allégation selon laquelle le progrès matériel, historiquement avéré, ne serait pas moralement un progrès. C'est donc par un détour que l'on parvient à associer ce que d'aucuns appellent « progrès » à ce que d'autres désignent par le biais de son antonyme. Et le phénomène le plus significatif est ici précisément le fait que pour opposer le progrès matériel et le progrès moral il soit nécessaire d'effectuer un tel détour. Car dans ce retour critique aux connotations positives que véhicule la notion de progrès, on oppose alors le progrès à lui-même, comme si sa signification éthique se scindait. Au lieu de s'ajouter nécessairement comme méta-catégorie positive, quelle que soit la trajectoire historique, le recours au progrès inscrit alors dans son usage éthique ce qui semblerait relever d'une contradiction.

Dans l'idée de deux progrès qui s'opposent l'un à l'autre, on aurait alors, d'un côté, l'ensemble contradictoire mais axiologiquement neutre de trajectoires historiques et, d'un autre côté, mais sans rapport avec lui, l'idée axiologiquement positive d'une amélioration. Et cette dichotomie interne de la notion de progrès, dont l'opposition entre le progrès moral et le progrès matériel laisse entendre qu'elle est insurmontable, mérite d'autant plus d'attention qu'elle semble reconduire l'histoire elle-même à une notion incompatible avec la connotation positive du terme de « progrès. »

LES DEUX ÉLÉMENTS DU CONCEPT DE PROGRÈS

L'analyse conceptuelle permet de mettre à jour la source discursive de cette aporie. Car du point de vue du concept, il importe de souligner que la notion de progrès comprend deux éléments indissociables. Elle comprend l'idée d'un

changement : c'est sa composante généralement donnée comme factuelle, empirique, matérielle, ou historique. Et elle comprend l'idée d'une *amélioration* : c'est sa composante généralement donnée comme éthique, normative, spirituelle ou prospective. Dire que dans la notion de progrès, le changement et l'amélioration sont deux éléments conceptuellement indissociables, c'est dire qu'en l'absence de l'un ou l'autre, la notion de progrès n'a plus de sens. Qu'il s'agisse d'une situation où un changement aboutit à une situation jugée indésirable ou, à l'inverse, d'une situation estimée désirable et que ne marque nul changement, dans les deux cas il est logique de refuser de dire qu'il y a progrès. L'exemple le plus évident se trouve dans les situations qu'un changement conduit à un état indésirable : on refuse carrément de parler de progrès. L'exemple inverse est moins évident mais tout aussi approprié du point de vue de la logique du terme. Là où une absence de changement s'applique à une situation estimée désirable, on parlera de stabilité, d'acquis, de bonheur, de civilisation, mais non de progrès.

Il faut attirer l'attention sur cette logique *élémentaire* du recours au progrès pour plusieurs raisons qu'on résumera en disant ce qui n'est pas seulement un paradoxe : changement et bien, ou si l'on préfère, modification et état désirable sont tout aussi conceptuellement nécessaires à la notion de progrès qu'ils ont été historiquement dissociés. Rien n'est conceptuellement plus nécessaire à la notion de progrès que l'articulation de ses deux éléments ; rien n'est plus aisé et du reste avéré que leur dissociation.

Cela découle sans doute du caractère hétérogène des deux éléments qui définissent le progrès. L'idée de changement n'implique nullement celle d'un mieux. À l'inverse, l'idée d'un bien n'implique nullement celle du changement. D'où la facilité avec laquelle les tenants du *statu quo* peuvent mettre en cause l'évolution des sociétés comme autant de « changements pour le changement. » D'où l'aisance avec laquelle les promoteurs d'innovation peuvent mettre en cause la stabilité elle-même comme point d'aveuglement au mieux qui exige un changement. Entre les deux, on s'y attend, circulent de solennelles mises en garde. Les progressistes se récrieront : on ne peut quand même pas dire que cela n'est pas mieux. Les stabilistes renchériront : vraiment, où allons-nous ? et quelle est la preuve que changement signifie mieux ?

Mais là s'arrête l'antinomie qui caractérise ces deux perspectives, car toutes deux s'accordent rapidement sur un critère du progrès. Les deux s'entendent sur l'idée que pour conjuguer le changement et le bien, il faut à tout le moins éviter le pire. La divergence en somme ne porte pas sur le critère, mais plutôt sur les objets auxquels le pire est appliqué. Pour le novateur, le pire est associé à la situation actuelle ; pour le tenant du *statu quo* le pire est associé au changement. Dans les deux cas, il s'agit bel et bien du progrès comme paradigme éthique, puisqu'il s'agit de prononcer non seulement sur les composantes du progrès mais aussi et surtout sur leur lien. Car si, pour parler de progrès, il faut conceptuellement conjuguer le changement et l'amélioration dans un binôme compatible et si, à propos tant du changement que de l'amélioration on ne

saurait s'accorder, reste une vérité qu'on ne saura, quant au progrès, extirper de la logique de son usage : à tout le moins éviter le pire devient la logique consensuelle minimale du recours au progrès.

D'un point de vue éthique, il faut donc éviter, à propos du progrès, de s'en tenir à la logique élémentaire de son usage. Par exemple, celle qui se bornerait à remarquer qu'il est fatal qu'un concept qui, à l'instar de la notion de progrès, comprend deux éléments hétérogènes apparaisse dans l'histoire comme une logique gâchée. Car l'hétérogénéité conceptuelle du changement et de l'amélioration désigne précisément ce qui, dans le progrès, constitue son enjeu éthique : l'enjeu de leur articulation. De ce point de vue, la disjonction conceptuelle appelle l'articulation positive des termes, le lien lui-même, comme son pari.

LE CRITÈRE DU PIRE

Le problème à l'étude est donc cette dichotomie entre le progrès moral et le progrès matériel dans la mesure où elle reconduit la réflexion à une scission éthique du concept de progrès. La thèse soutenue ici est qu'en dépit des apparences la dissociation établie entre ces deux progrès repose sur une définition du progrès à partir d'un même critère ultime : le critère du pire comme étalon du progrès. D'où, quant au progrès, un aspect méconnu et pourtant agissant de la logique de son usage : la difficulté apparemment insurmontable d'en définir les objets, les trajectoires et les paramètres *positivement*. D'où également la facilité, qui n'en est que le corollaire d'inscrire la référence au progrès dans un scénario noir : se multiplient les spectres du déclin, du péril, du recul, des catastrophes, de la décadence, comme si nul interstice éthique ne séparait le progrès de ses antonymes, à part la rappel à l'ordre qui en proclame la collusion.

Ceci n'est pas sans conséquences, car d'atténuation en atténuation, c'est la connotation axiologiquement positive de la notion de progrès qui est à la dérive, ce qui est une autre manière de désigner la scission éthique dont nous discutons. Un premier paradoxe marque dès lors le recours au progrès dans la logique atténuative de son usage. Après avoir substitué le mieux au critère du bien qui se donnerait dans l'absolu, c'est-à-dire après avoir atténué la prétention éthique se rattachant au progrès, on substitue au mieux le critère du pire, comme s'il s'agissait de ré-introduire sinon un absolu, du moins, une base indiscutable de consensus.

Ce que faisant, toutefois, on n'a pas simplement reconduit les débats sur le progrès à une relativité négative qui ne serait que l'image formellement inversée du critère du mieux. On a introduit, dans la notion même de progrès, une axiologie négative où, à proprement parler, progresser ne signifie plus « faire mieux. » Progresser devient synonyme d'avoir évité le pire, notion d'autant plus discutable que, quant au progrès, elle occulte un double phénomène de tension. Il y a tout d'abord la tension entre le changement et le bien que le

recours au mieux relativise. Or, dans la vie individuelle comme dans la vie collective, les situations ne manquent pas où le fait de dire « cela va mieux » ne signifie pas « cela va bien. » En second lieu, il y a la tension entre le changement et l'amélioration que le recours au pire extirperait du relativisme. Or, dans la vie individuelle comme dans la vie collective, le fait d'avoir échappé au pire ne peut se dire que négativement du progrès.

Ce que l'on n'a pas vu, c'est à quel point l'introduction du pire comme critère ultime du progrès autorisait une banalisation de la notion de progrès comme référence éthique. Car ce critère introduisait, dans le progrès, une asymétrie normative, celle où la dénonciation d'un mal n'implique nullement la recommandation d'un bien. Et insistons sur ceci : le passage d'une axiologie négative du progrès (défini par le critère du pire à éviter) à une axiologie positive du progrès (défini par un mieux qui serait un parcours vers un bien) est *interdit* par le critère même devant minimalement en assurer la liaison effective : le critère du pire, devenu substance du progrès. Surgissent alors les deux conséquences méconnues du recours au progrès dans la logique empirante de son usage. Non seulement le critère du pire autorise-t-il une banalisation de l'acception négative du progrès et ce, de pire en pire. En outre, et ceci est décisif pour la logique de son usage, le critère du pire renvoie la connotation axiologiquement positive du progrès à la plus complète indécidabilité.

VOLTAIRE CONTRE ROUSSEAU

Il est possible d'illustrer les paramètres de cette analyse conceptuelle en retenant deux grands noms du siècle des Lumières qui, quant au progrès, engageaient déjà la logique de son usage dans une antinomie. Ce qui nous intéresse ici n'est qu'un aspect du débat entre Rousseau et Voltaire, celui qui les oppose radicalement sur la notion de progrès et ce, dans des termes où la dissociation entre le progrès matériel et le progrès moral est largement présente, revendiquée par Rousseau et critiquée par Voltaire.

Connu comme l'homme de la grande émancipation, celui qui veut changer l'esprit des hommes en préparant « une révolution dans les esprits, » Voltaire est surtout reconnu par l'histoire comme l'homme du progrès. Il en est même connu comme l'avocat de ses artisans autoritaires, qu'il s'agisse des génies, des grands hommes, pour ne pas dire en toutes lettres les despotes éclairés. Selon René Pomeau, Voltaire est le seul historien peut-être qui ait écrit l'histoire pour médire du bon vieux temps. « Si vous voulez de bonnes lois, brûlez les vôtres, » écrivait sans ambages ce grand défenseur de la civilisation, qu'il entendait d'ailleurs dans un sens très large, comme l'histoire évolutive des arts, des sciences, des techniques, du commerce, des institutions, et même des religions.

Quant à Rousseau, il est difficile de trouver, sur la notion de progrès, de critique plus radical et plus systématique. Sa célèbre réponse à la question de l'Académie de Dijon pour le prix de 1750 en témoigne éloquemment. Ayant

pris soin de modifier le libellé de la question de l'Académie en lui ajoutant un autre verbe—« Si le rétablissement des sciences et des arts a contribué à épurer les mœurs ou à les corrompre »—Rousseau a donc pris, comme l'avait prédit Diderot, le parti que nul ne prendrait. Citons un seul passage du premier *Discours* qui, quant à la notion de progrès marque un renversement spectaculaire. Rousseau écrit : « Tandis que le gouvernement et les lois pourvoient à la sûreté et au bien-être des peuples rassemblés, les sciences, les lettres et les arts, moins despotiques et plus puissants peut-être, étendent des guirlandes de fleurs sur les chaînes dont ils sont chargés, étouffent en eux le sentiment de cette liberté individuelle pour laquelle ils semblaient être nés, leur font aimer leur esclavage et forment ce qu'on appelle des Peuples policés. » Rousseau avait ajouté : « Peuples policés, heureux esclaves, cultivez-vous ! Vous aurez l'avantage de posséder les apparences de la vertu sans en avoir aucune : nos âmes se sont corrompues à mesure que nos sciences et nos arts se sont avancés à la perfection. »

L'antinomie de ces deux visions du progrès est radicale, quelles que soient les nuances ou les mises au point par lesquelles on pourrait parvenir à l'atténuer. Car ce qui s'oppose ici n'est pas, d'un côté, la défense inconditionnelle du progrès et, de l'autre, son rejet inconditionnel. Après tout, c'est Voltaire et non Rousseau qui a conclu son *Essai sur l'histoire générale* (1756) en affirmant que « Presque toute l'histoire n'est donc qu'une longue suite d'atrocités inutiles. » Similairement, c'est Rousseau et non Voltaire qui a écrit dans le *Contrat social* (1764) que « les limites du possible en matières morales sont moins étroites qu'on ne croie » et ceci après avoir, à l'instar de Voltaire, mis en cause le dogme d'une nature humaine originellement déchue.

Ce qui s'instaure ici et qui mérite attention n'est donc pas l'opposition simple entre le progrès et la décadence. C'est plutôt, au nom même du progrès, la critique du progrès et, toujours au nom du progrès, la critique de cette critique, phénomène doublement révélateur. S'y condense en effet une axiologie négative par le biais d'une dissociation entre le progrès historique et le progrès moral. C'est au nom du progrès moral ou du développement de la vertu, associée chez lui à la « nature » entendue comme norme axiologique que Rousseau dénonce l'évolution des sciences, des arts, des techniques et des institutions. C'est au nom du progrès historique et notamment matériel que Voltaire dénonce cette critique, mettant en cause les illusions rétrospectives, voire éthiques empêchant, au nom du bien, de reconnaître l'évolution de l'humanité vers un mieux. « Détruisez les sciences, écrit-il à d'Alembert, les vices resteront et on aura l'ignorance en plus. »

L'antinomie éthique de ces deux visions du progrès est si radicale qu'on peut se demander si, entre Voltaire et Rousseau, il y avait matière à débat. Mais il y eut débat et pour en parler nous retiendrons quelques éléments de leur échange épistolaire qui permettent à l'analyse de dépasser les lieux communs. Voltaire, rappelons-le, n'a pas répondu immédiatement à la critique radicale du progrès

que contenait le premier *Discours*. En 1750, il parle même des écrits de Rousseau comme ceux d'un homme qui n'est point « indifférent à la vertu. » C'est en accusant réception du second *Discours* sur l'origine et les fondements de l'inégalité parmi les hommes que Voltaire reviendra au premier *Discours* et significativement en évoquant le passage que nous avons cité où il était question du progrès à partir de la métaphore des « guirlandes de fleurs. »

Dans une lettre à Rousseau datée du 30 août 1755, Voltaire écrit : « J'avoue que les belles lettres et les sciences ont causé quelques fois beaucoup de mal. » Suit alors une description des harcèlements et des persécutions dont les *défenseurs* du progrès sont victimes. « Mais avouez, » écrit Voltaire, « que ces épines attachées à la littérature et à la réputation ne sont que des fleurs en comparaison des autres maux qui de tout temps ont inondé la terre. » Voltaire conclut : « Les grands crimes n'ont été commis que par de célèbres ignorants, » à quoi Rousseau répondra ceci qui marque bien leur opposition fondamentale : « tous les maux des hommes leur viennent de leur erreur bien plus que de leur ignorance... ce que nous ne savons point nous nuit toujours beaucoup moins que ce que nous croyons savoir. »

S'engage ici un débat sur le progrès où le chassé-croisé des références à ses diverses connotations est mu par un recours antinomique à ce qui, de l'ignorance ou de l'erreur, constitue le pire. Ce débat est du reste immédiatement répercuté sur la manifestation sociale du changement historique et notamment sur le rapport entre l'évolution historique et la question de l'inégalité. Encore une fois, les visions sont aux antipodes, ainsi que le révèlent les annotations de Voltaire au texte même du second *Discours*.

Dans le second *Discours* sur l'origine et les fondements de l'inégalité parmi les hommes, loin de se repentir des outrances qu'on avait attribuées à sa critique du progrès, Rousseau avait renchéri sur le caractère immoral de l'évolution historique. Il avait notamment ajouté au tableau cette constatation navrante : quand on songe à toutes les révolutions qui, depuis l'invention des huttes, puis de l'agriculture et de la métallurgie et ceci, en direction de la création des lois, de la magistrature, bref de la société civile, ont été des pas apparents vers la perfection de l'individu et la décrépitude de l'espèce, on ne peut manquer de s'interroger sur les prodiges grâce auxquels, par les lois, le fort se résolut à servir le faible, assurant alors, par le projet le plus réfléchi qui soit jamais entré dans l'esprit humain, sa suprématie. Au nom du progrès moral, en l'occurrence, la vertu politique, Rousseau de protester : « les peuples se sont donné des chefs pour défendre leur liberté et non pour les asservir. » A quoi Voltaire répondra, au nom du progrès historique, en l'occurrence l'évolution du cadre juridique : « au contraire, les lois protègent le pauvre contre le riche. »

S'agissant de la propriété, l'antinomie se durcit. Rousseau avait écrit : « Le premier qui ayant enclos un terrain s'avisa de dire *ceci est à moi* et qui trouva des gens assez simples pour le croire fut le vrai fondateur de la société civile. » Cette théorie selon laquelle « la terre n'est à personne » s'attire l'exclamation de

Voltaire : « Voilà la philosophie d'un gueux, du reste fort paresseux, qui voudrait que les riches fussent volés par les pauvres. »

Voici donc nos deux grands noms du siècle des Lumières engagés dans un débat sur ce qui, de l'ignorance ou de l'erreur, de l'absence de lois ou de l'existence d'un cadre juridique, de la division des terres ou de la propriété est susceptible quant au progrès de tenir lieu de critère ultime. Le débat est engagé sur le critère du pire, étant entendu que pour Rousseau la situation de l'homme naturel, voire de l'homme sauvage, est à tout prendre moins pire que celle de l'homme policé, tandis que pour Voltaire, la situation historique de l'homme dit « naturel » surtout en comparaison avec la situation présente offre à l'observateur plus de limites, moins d'avantages et, dans l'ensemble, plus de cruauté.

On aurait donc tort de ramener ce débat à une opposition entre une vision modérée du progrès commandée par le réalisme historique, celle où le bon sens interdirait d'identifier l'histoire à une enfilade de décadences, et une vision intransigeante du progrès commandée par l'idéalisme éthique, celle où le sens moral interdirait d'identifier l'histoire à l'avènement de la vertu. Car ce qui s'oppose ici n'est pas une vision qui, par son attachement à l'élément descriptif du concept de progrès, en aplatirait la norme dans un mieux relativisé, tandis que par son attachement à la connotation éthique du progrès l'autre vision en viendrait à annuler son rapport à l'histoire. Dans le chassé-croisé des références tant factuelles que normatives qui caractérise chacune de ces perspectives, c'est la manière dont il convient de définir le pire qui s'oppose ici. C'est la manière dont par ce biais on peut prononcer sur la liaison entre le changement et le bien ou le changement et le mieux qui est ici en cause, c'est-à-dire le pire comme critère de la connotation positive du progrès.

Or, c'est à ce niveau que le débat s'envenime, Voltaire n'ayant pas été le seul à penser qu'il y avait sans doute trop de Pascal dans ce Genevois. La première escarmouche est en effet de Voltaire. Parlant du second *Discours* sur l'origine et les fondements de l'inégalité parmi les hommes, il écrit à Rousseau : « J'ai reçu, Mr, votre nouveau livre contre le genre humain. » Voltaire ajoute : « On n'a jamais employé tant d'esprit à vouloir nous rendre bêtes, » ce à quoi Rousseau ripostera du tac au tac : « A votre égard, Monsieur, ce serait un miracle. »

La suite se ressent d'un envenimement dont, par-delà le conflit des personnalités, voire l'exaspération polémique, on n'a pas noté à quel point il relevait d'une articulation de la notion de progrès à une logique du pire. S'agissant de l'état de nature qui, chez Rousseau, opère à la manière d'une norme éthique, Voltaire remarque : « il prend des envies de marcher à quatre pattes. » Rousseau répond sur le même ton : « Personne n'y réussirait moins que vous. Vous nous redressez trop bien sur nos deux pieds. » Retournant l'argument rousseauiste contre son auteur, Voltaire ajoute : « Je ne peux non plus m'embarquer pour aller trouver les Sauvages du Canada . . . » Il semblerait, en effet, que « nos nations les ont rendus presque aussi méchants que nous. » Cette fois, c'est au

tour de Rousseau de différer sa réponse qui surviendra pourtant au sein d'un autre échange épistolaire dont on n'a pas suffisamment souligné la portée sur la notion de progrès.

ROUSSEAU CONTRE VOLTAIRE

Connu comme l'échange sur la Providence, c'est-à-dire la critique que Rousseau a faite du *Poème* que Voltaire avait rédigé sur le désastre de Lisbonne, cette correspondance est éclairante. S'y profile en effet un débat où, quant à la possibilité même du progrès, nos deux protagonistes semblent changer de rôle. Cette fois, c'est Voltaire qui instaure une critique radicale et c'est Rousseau qui lui reproche de renchérir sur le pire, renversement d'autant plus spectaculaire qu'il demeure largement compatible avec l'oppositon radicale qui marquait leur débat antérieur.

C'est à propos du désastre de Lisbonne que ce que l'on a appelé « le pessimisme » de Voltaire se déploie largement. Dans une lettre aux Tronchins, Voltaire parle de « cent mille fourmis, notre prochain, écrasées tout d'un coup dans notre fourmillière, » comme s'il s'agissait d'ajouter au thème récurrent d'un Dieu immense et de l'homme insecte, voire aux démêlés humains que *Zadig* décrit comme « des insectes se dévorant les uns les autres sur un petit atome de boue, » cette catastrophe dont le caractère naturel n'empêche en rien le mal d'être un scandale. Le tableau de la nature qui n'offre au vicaire Savoyard qu'harmonie et proportion, le concert même des éléments, fera à nouveau sursauter Voltaire d'indignation. Dans ses annotations à l'*Emile*, il s'exclamera : « Quel concert que des inondations, des tremblements, des gouffres ! » Et fût-ce pour écarter la fatalité du mal associant dans le pire les hommes et la nature, toute atténuation atteint ici la limite de l'inqualifiable. « Et l'on voudrait, s'insurge Voltaire, que je dise que tout est bien et qu'il fallait que ce soit ainsi ? » Dans une lettre au pasteur Bertrand, Voltaire conclut d'une manière qui va plus loin que l'éloquence : « Quand on me dit que cela ne pouvait être autrement, on outrage la raison et mes douleurs. Pour moi je souffre et je le dis. » Telle est l'énigme inadmissible à laquelle le champion du progrès, y inclus matériel, est reconduit, par-delà même les outrances qui dans les *Discours* de Rousseau avaient refusé d'associer un bien au mieux.

Or, autant Voltaire avait-il reproché à l'auteur des deux *Discours* d'avoir exagéré dans son tableau des préjudices découlant du progrès des arts, des sciences et des institutions—« comme tu outres tout ! comme tu mets tout dans un faux jour ! » avait-il écrit en annotant le passage du second *Discours* où Rousseau affirmait que « sans changement d'état, les riches cesseraient d'être heureux si le peuple cessait d'être misérable »—autant est-ce le tour de Rousseau de reprocher à l'auteur du *Poème* sur le désastre de Lisbonne de renchérir sur le tableau de nos misères et de nos maux.

« On dirait, écrit Rousseau, que vous craignez que je ne voie pas assez à quel point je suis malheureux. » Il avait ajouté : « cet optimisme que vous trouvez si

cruel me console pourtant dans les mêmes douleurs que vous me peignez comme insupportables. Le poème de Pope [tout est bien] me porte à la patience, le vôtre me réduit au désespoir. » La conclusion de Rousseau montre bien à quel point nos deux protagonistes ont changé de rôle. C'est Rousseau qui écrit : « A tout prendre, la vie humaine n'est pas un mauvais présent. Si ce n'est pas toujours un mal de mourir, c'en est rarement un de vivre. » Thèse qui rappelle étonnamment l'*Anti-Pascal*, là où Voltaire avait affirmé que l'homme était « à sa place dans la nature, » étant entendu que le mal et le bien, le plaisir et la peine sont « deux ingrédients nécessaires » à son « composé. »

A l'instar de Voltaire s'objectant aux exagérations des deux *Discours*, l'à tout prendre de Rousseau concernant le débat sur le désastre de Lisbonne marque un renversement de rôle d'autant plus significatif qu'il maintient le critère du pire comme étalon. Du même coup se renverse également la tendance à banaliser le pire qui est inscrite dans cette axiologie négative du progrès. Chez Voltaire, cette tendance se manifestait dans son ironie à l'égard du modèle même de progrès moral que, par la notion d'état de nature, Rousseau opposait au progrès tout court. Quant à associer le progrès moral, c'est-à-dire le bien, à un mieux historique qui aurait connu son heure dans l'état sauvage, pourquoi arrêter la nature en si bon chemin ? N'y a-t-il pas lieu de « marcher à quatre pattes, » c'est-à-dire de retourner à l'état qui, à l'instar de l'animal, perfectionnerait, par l'usage, son instinct ? Quant aux sauvages, Voltaire rappelle qu'il en est qui « aplatissent le front de leurs enfants afin qu'ils tirent aux oiseaux qui passent au-dessus de leurs têtes, » ce qui lui permet de moquer le sentiment naturel de pitié que Rousseau opposait alors à la thèse égoïste : « ne dirait-on pas, ironise-t-il, que les Iroquois sont plus compatissants que nous ? »

Chez Rousseau, la tendance à la banalisation du pire prend une autre tournure, mais elle n'en est pas moins présente et comparable dans son effet. « Dans cette étrange opposition, [entre ce que vous établissez et ce que j'éprouve] dites-moi qui s'abuse ? » avait-il demandé en désarroi. « D'où viennent ces contradictions ? » redemande-t-il à la fin de sa lettre à propos du *Poème* sur le désastre de Lisbonne. La réponse survient dans une courte phrase. Rousseau écrit : « Vous jouissez mais j'espère ! » raccourci d'autant plus stupéfiant qu'il aplatit jusqu'à la question que Voltaire posait dans l'angoisse devant une catastrophe naturelle. Quant au tremblement de terre, Rousseau s'était permis d'en banaliser le pire, s'étant fait fort de rappeler que si les Lisbonnais n'avaient pas été entassés dans une ville avec ses maisons à six ou sept étages et si ils avaient fui, au lieu de chercher à apporter leur argent, il y aurait eu moins de morts. Quelle que soit la cohérence de la réaction de Rousseau, dont on connaît l'aversion pour les villes, il importe de souligner que dans le contexte de ce débat, elle procède à l'atténuation du pire—cent mille hommes, notre prochain, emportés tout d'un coup—en frôlant tout autant la platitude que l'ironie de Voltaire contre l'état de nature frôlait la perfidie.

Ce phénomène de banalisation qui est inscrit dans le recours au progrès à partir d'une axiologie du pire doit être relevé, ne serait-ce que pour marquer le

paradoxe qui caractérise alors la logique de son usage : après avoir introduit le pire pour éviter le relativisme du mieux et au fin de redonner, en quelque sorte, à la notion éthique de progrès son épine dorsale, on est reconduit à une relativisation aplatissant jusqu'à l'enjeu négatif du progrès. La banalisation du pire n'est cependant pas le tout, ni même l'essentiel, des débats sur le progrès, car elle s'arc-boute à un débat de fond dont les enjeux éthiques ne sauraient être indéfiniment ajournés.

Ainsi, dans les répliques de Rousseau, par exemple à propos de l'argument des villes, on passerait à côté de son propos si on ignorait que, pour lui, à force de vouloir améliorer son sort, l'humanité en aggrave continuellement les chaînes. Selon Rousseau—et là-dessus Voltaire défigure sa thèse—la référence à la nature ne consiste pas à soutenir que, dans la nature, tout est bon. La thèse de Rousseau est que les maux ressortissant des lois de la nature sont toujours moins graves et moins cruels que ceux que nous leur ajoutons. « La nature humaine, » prononcera-t-il dans *Rousseau juge de Jean-Jacques*, « ne rétrograde pas et jamais on ne remonte vers les temps d'innocence et d'égalité une fois qu'on s'en est écarté. » Le problème du progrès, le drame de la perfectibilité, c'est qu'au lieu de servir à améliorer leur sort, les hommes s'en servent pour aggraver leurs maux. Dans la logique même du progrès s'inscrit une loi qui est celle des empirations successives, d'où ce que Rousseau a qualifié lui-même de son « aversion pour les révolutions. » La loi d'empirication marquant l'histoire des hommes apparaissait dès sa réplique à la lettre de Voltaire critiquant ses deux *Discours*. Rousseau avait écrit : « il vient un temps où le mal est tel que les causes mêmes qui l'ont fait naître sont nécessaires pour empêcher le mal d'augmenter. »

Similairement, les critiques de Voltaire, par exemple à l'égard de l'état de nature, ne seraient qu'ironie si on ignorait que, pour lui, tout autant que la société et vraisemblablement plus qu'elle, la nature est source de maux. Selon Voltaire—et là-dessus Rousseau défigure sa thèse—la référence à la nature ne consiste pas à soutenir que tout est mal. La thèse de Voltaire, c'est qu'au mal social, voire au pire introduit par les hommes, comme par exemple le fanatisme, la nature peut ajouter pire et demi. Le problème du progrès, c'est que la nature trouve le moyen de renchérir sur l'infâme, voire sur la canaille, dans un procès discontinu. Celui qui ramène décidément trop vite le cours de l'histoire à cette longue suite « d'atrocités inutiles, » dans une collusion du naturel et du social où la mort interdit tout alibi.

Rousseau avait raison : si radicale soit-elle, cette opposition entre les deux grands noms du siècle des Lumières est « étrange. » Car les deux sont d'accord pour inscrire le progrès dans une axiologie du pire où la loi du changement réside dans le fait qu'on puisse toujours y ajouter. Les deux sont d'accord pour associer le progrès à une axiologie du mal si profondément distincte d'une axiologie du bien que non seulement le critère du mieux s'est déplacé vers le progrès comme axiologie négative, mais en outre la connotation axiologiquement positive de la notion de progrès est renvoyée à la plus complète indéter-

mination. Significative, à cet égard, est la manière dont le débat sur le désastre de Lisbonne atteint son ultime conclusion. A propos de la Providence, Rousseau écrira : « Je la sens, je la crois, je la veux, je l'espère, » à peu près de la même manière que Voltaire ajoutera à la finale de son *Poème* « le beau mot d'espérer. » Mais il l'ajoutera tout juste avant ce qui traduit chez lui la plus profonde fatalité du pire et tout juste après l'allusion au Dieu horloger. La finale révisée se lit de la manière suivante : « Mortels, il faut souffrir, se soumettre, adorer, *espérer* et mourir. »

« Je souffre et je le dis, » telle est la limite ultime de ce qu'on a appelé « l'optimisme » de Voltaire. « Je crois et j'espère, » telle est la limite ultime de ce qu'on a appelé « le pessimisme » de Rousseau. Comme quoi l'idée d'espoir qui traverse le progrès comme axiologie positive ne saurait être ni écartée ni accomplie. Le *sursum corda* qu'appelle le progrès, comme corollaire d'un mieux défini par le critère du pire renvoie l'axiologie positive du progrès à un indécidable. Celui qui fera dire à Candide : « Cultivons notre jardin. » Celui qui fera dire à Emile : « rester à sa place et s'y fixer, » c'est tout ce qu'on peut faire pour être bien.

ET GAVROCHE ?

Mais comme eût dit Gavroche, à propos de cette axiologie du pire qui fait buter la connotation positive du terme de « progrès » au seuil précis de l'espoir :

Le pas pire est sur terre
C'est la faute à Voltaire
Le pire court au galop
C'est la faute à Rousseau

Ce n'est pourtant pas ainsi que se répercutait l'héritage des Lumières dans la bouche de cet étrange gamin-fée. On se rappellera que c'est sous les balles, dont il taquinait la fusillade, que Gavroche chantait. La cinquième balle ne réussit qu'à tirer de lui ce couplet :

Joie est mon caractère
C'est la faute à Voltaire
Misère est mon trousseau
C'est la faute à Rousseau

On se rappellera également que c'est sous la chanson que ce petit oiseau becquetant ses chasseurs connaît la mort. La balle fatale tire de lui ces lignes :

Je suis tombé par terre
C'est la faute à Voltaire
Le nez dans le ruisseau
C'est la faute à . . .

Le point de suspension qui marque la finale est tout aussi énigmatique que l'enjeu du progrès. Faut-il ici entendre que dans cet effrayant jeu de cache-cache avec la mort le trépas du nain invulnérable traduit la fin de l'espoir ? Ou bien faut-il entendre qu'au plus profond du pire, il en fait surgir le défi ?

Le seul indice que nous ayons en la matière demeure, comme la chanson, inachevé. Lorsque ce farfadet épris de république répondait à chaque décharge par un nouveau couplet, il corrigeait en un sens positif la version alors connue de la faute aux Lumières. Composée par le poète suisse Jean-François Chaponnière en 1817, cette version comprenait les couplets suivants:

Si le diable, adroit et fin
A notre première mère
Insinua son venin
C'est la faute de Voltaire
Si le genre humain dans l'eau
Pour expier son offense
Termina son existence
C'est la faute de Rousseau

Si Borgia, ce bon humain
Pour arrondir son affaire
Fut sacrilège, assassin
C'est la faute de Voltaire
Si l'on vit ce Loth nouveau
S'enflammer pour sa famille
Et faire un fils à sa fille
C'est la faute de Rousseau

Avec Gavroche, on est loin de cette axiologie du pire et il est permis de penser que lorsqu'il gambadait de balle en balle (de pire en pire ?), Gavroche se redressait pour chanter ce qui, par-delà Voltaire, par-delà Rousseau, dirait le temps venu d'entonner l'espoir des misérables. La fin d'une axiologie du pire et le début dicible d'un monde positivement meilleur. Ce monde-là, pour celui qui faisait un pot-pourri des voix de la nature et des voix de Paris, s'appelait « république. » Celle dont il avait quitté la barricade afin de lui faire provision de gibernes bien garnies. Et dans la variante à la dernière chanson de Gavroche, celle qui a dormi dans les appendices à l'édition nationale comme un secret, on trouve un dernier couplet. Celui que le saute-ruisseau aurait chanté dans son redressement ultime disait ceci :

La république est mère
C'est la faute à Voltaire
Du gamin lionceau
C'est la faute à Rousseau

L'énigme du progrès, le fin mot de l'énigme, ce n'est pas la fatalité du pire. L'énigme du progrès, du point de vue éthique, c'est l'exigence irrépressible d'un monde positivement meilleur. Et c'est pourquoi sans doute pour appeler le passage d'une axiologie négative à une axiologie positive du progrès, il fallait autre chose que le spectre récurrent de toutes les décadences. Pour en nommer l'espoir au sein même du progrès, il fallait mieux encore que Voltaire et Rousseau. Il fallait le gazouillement à la limite du tragique d'une petite grande âme. La bouche courageusement impertinente d'un enfant.



ACADÉMIE I

**Académie des lettres
et des sciences humaines**

COLLOQUE:
NATIONALISME ET DIVERSITÉ
CULTURELLE AU QUÉBEC



Sur l'avenir du nationalisme québécois dans une perspective interethnique et internationale†

LES COMMENTAIRES qui suivent ne sont pas ceux d'un spécialiste à proprement parler de la question nationale. Ils sont plutôt le fruit d'une réflexion nourrie par un itinéraire professionnel et intellectuel que, sans aucun doute, de nombreux Québécois de ma génération ont parcouru dans les 25 dernières années. L'argument pourrait se résumer comme suit : après avoir pris le nationalisme pour acquis, comme composante, sinon comme matrice, de la vie collective québécoise, faut-il désormais s'en détourner parce qu'en définitive, il aurait précisément pour effet d'appauvrir cette vie collective et de freiner son développement ? A cette question, et dans le contexte actuel du Québec, je soumets une réponse négative, mais assortie de deux conditions. La première fait référence à une nécessaire redéfinition du nationalisme québécois en termes de développement collectif ; l'autre concerne diverses pratiques d'ouverture qu'il conviendrait soit d'accentuer, soit de mettre en oeuvre.

LÉGITIMITÉ DU NATIONALISME QUÉBÉCOIS

En premier lieu, par nationalisme il faut entendre ici non pas une idéologie comme telle mais un fait social et historique, un sentiment ou une solidarité collective spécifique, qui n'est pas celle de la classe, de la paroisse, de la confession religieuse ou de l'association volontaire. Ce sentiment et cette solidarité s'expriment certes dans des idéologies et des actions collectives ; ils prennent des figures sociales et politiques particulières selon les situations, les époques, mais ils n'y sont jamais réductibles tout à fait. Il s'ensuit que, par

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définition, le nationalisme doit constamment être redéfini, ou plus exactement traduit en formes, en projets sociaux appropriés aux temps présents. En résumé, selon notre conception, le nationalisme est le sentiment partagé d'une histoire à inventer concrètement dans le cadre d'une collectivité donnée, ainsi que la gestion politique qu'il faut en faire.¹

A cet égard, il est utile de noter que les critiques dirigées contre le nationalisme mettent en cause en réalité non le nationalisme lui-même mais certaines des expressions (en général soigneusement sélectionnées) qu'il a prises historiquement. Ainsi, nul n'a pu démontrer jusqu'ici l'existence d'une relation nécessaire entre le sentiment national et les horreurs collectives auxquelles il lui est arrivé d'être associé dans le passé. Cette thèse achoppe toujours, comme on sait, à l'évidence de nombreux précédents allant dans le sens contraire. Plusieurs intellectuels pourraient être cités ici, de Lord J.D. Acton (1948) à Pierre-E. Trudeau (1956, 1964), pour qui le nationalisme conduit inévitablement à l'intolérance, à la xénophobie, au conservatisme réactionnaire et à des formes plus ou moins exacerbées d'absolutisme. Plus nuancées, les critiques formulées par des auteurs comme Jean-Louis Gagnon (notamment: 1985, 1988) doivent être replacées dans le contexte québécois des années 1930-40. D'autres auteurs encore (par exemple, F. Ricard, 1989, s'appuyant sur A. Finkelkraut, 1987) reprochent au nationalisme québécois des 25 dernières années d'avoir appauvri la vie culturelle en l'isolant des grands courants de pensée internationaux et, tout particulièrement, en l'éloignant des grandes cultures francophones. Il faut être très sensible à ce genre de rappels qui, par ailleurs, ne rend pas tout à fait justice au néo-nationalisme de la Révolution tranquille et à de nombreux prolongements très positifs que le Parti québécois lui a donnés jusqu'en 1980. En outre, les plaidoyers en faveur de l'universalisme de la culture sont eux-mêmes sujets à une anthropologie très abstraite, elle aussi menacée de stérilité.²

Enfin, il convient de traiter à part sans doute la thèse un peu surprenante de J.-L. Migué (1978, 1986), qui voudrait confier à la loi du marché—donc au « libre » choix du consommateur—la gestion des biens et des objets culturels. Dans cette perspective, des politiques de protection ou de promotion mises de l'avant par l'État au nom de l'identité nationale devraient être tenues pour abusives. Comme d'autres, cette démarche procède d'une négation du caractère collectif de la culture, lequel constitue précisément le point de départ de notre commentaire.³

1 L'énoncé est trop rapide sans doute. Une démarche plus attentive, plus rigoureuse, obligerait à préciser des traits importants. Par exemple, nous faisons évidemment référence ici à des collectivités linguistiques, disposant en totalité ou en partie d'un appareil d'État, etc.

2 Rappelons ici la phrase de Fernand Dumont (1971): « Ceux qui parlent des « préjugés nationaux » n'ont jamais tout à fait tort, mais ils contribuent souvent à une [autre] mystification (...): ils confondent la fermeture sur soi, qui est une négation de l'universel, avec la conscience de soi qui en est la condition d'accès » (p. 86).

3 Dans un contexte différent mais d'une manière analogue, des représentants de la bourgeoisie d'affaires francophone de Montréal à la fin du 19^e siècle étaient tentés d'évacuer tout simplement le problème national en ramenant les données à l'échelle des individus; ce qui permettait

Cette question est primordiale. Dans le cas de collectivités comme le Québec francophone, caractérisées par de forts éléments d'homogénéité culturelle, la réalité sociologique qui fonde le nationalisme comme sentiment d'appartenance représente une donnée antérieure au politique et à toute construction idéologique. Produite par l'histoire, cette donnée semble plutôt positive en elle-même, pour les raisons suivantes :

- Le sentiment national est le reflet d'une sensibilité collective, elle-même issue d'expériences accumulées et de valeurs élaborées dans un passé commun. Celles-ci représentent un potentiel, un capital culturel et social susceptible de se traduire en créativité, en actions collectives pouvant constituer des contributions originales (et modestes sans doute s'il s'agit du Québec) à la civilisation.
- Le nationalisme, en tant que défense et promotion de l'État-nation, se justifie aussi par la résistance qu'il oppose à l'échelle mondiale à l'uniformisation (parfois déguisée en universalisme . . .) des modèles culturels, à la mise en dépendance et à l'appauvrissement qui s'ensuit. Ici comme ailleurs, la diversité est synonyme d'enrichissement.

A l'appui de ces énoncés, on me permettra de rappeler, après bien d'autres, que l'État-nation et le nationalisme ont servi de cadre à la mise en place du régime démocratique contemporain, qu'ils ont dans une large mesure (en Occident tout au moins) donné suite au programme social et culturel de l'Europe des Lumières, qu'ils ont inspiré—et continuent à le faire—les principales luttes d'émancipation collective du dernier demi-siècle. A l'opposé, il est non moins vrai, comme nous l'avons rappelé déjà, qu'ils ont aussi encadré plusieurs actions collectives dégradantes. Il est donc préférable de juger le sentiment nationaliste québécois, non pas en lui-même, mais sur notre capacité de le traduire en actions positives, ce qui est une manière de souligner toute la responsabilité qui échoit présentement aux intellectuels et aux décideurs.

En résumé, c'est à cette condition surtout que le nationalisme mérite d'être défendu : comme potentiel de création, de développement collectif, d'apports à la civilisation ; comme une sorte de vouloir-faire collectif.⁴ A cet égard, il est bien vrai que le Québec revendique encore plus de potentiel que d'actifs proprement dits, et ce malgré les changements très importants réalisés depuis 30 ans. Il y a certes quelques raisons de croire que notre société est prête à amorcer une deuxième Révolution tranquille (cf. infra) ; mais il existe au moins deux défis qu'il faudra d'abord relever.

d'affirmer : « Il n'y a pas de *French Canada*, pas plus qu'il n'y a de *Scotch Canada* ou d'*English Canada* pour les citoyens de la province de Québec. Pour ces derniers, il n'y a qu'un Canada » (*Moniteur du commerce*, avril-mai 1898, cité par F. Roy, 1988, p. 246).

⁴ C'est pour cette raison sans doute qu'encore aujourd'hui on s'intéresse aux Étrusques, aux Assyriens, aux Mayas, aux Aztèques, à toutes les cultures disparues ou menacées de disparaître.

Le premier défi consiste à redéfinir un contenu pour le nationalisme, en termes d'orientations et de changements collectifs. Avec la Révolution tranquille, le Québec francophone a délaissé le nationalisme traditionnel, axé principalement sur la défense de la culture. Le nouveau nationalisme des années '60 a été caractérisé, comme on sait, par un contenu progressiste, traduit dans des orientations économiques et sociales. Avec le recul, on voit bien que la direction à suivre à cette époque s'est imposée d'elle-même, sans grande difficulté, auprès de l'ensemble de la population : la modernisation, et plus précisément le rattrapage, fournissait le fil directeur.⁵ C'est plutôt dans l'ordre des moyens et des ressources (financières, techniques, humaines) que les problèmes se posaient alors. En regard, on pourrait dire que le Québec des années '90 se trouve dans une situation contraire : les ressources sont relativement abondantes, c'est la direction collective qui fait défaut.

En effet, grâce au travail réalisé depuis la décennie 1960-70, on peut considérer que le programme de la Révolution tranquille est maintenant complété et que le Québec a enfin rejoint le peloton de tête des sociétés dites modernes ou développées—entendons par là que sa situation n'inspire ni plus ni moins d'inquiétudes que celle des autres sociétés d'Occident. Il se trouve à nouveau sur une sorte de ligne de départ. A tout prendre, jamais dans son histoire notre société n'aura bénéficié de conditions de développement aussi favorables sous le rapport des équipements collectifs, des ressources humaines et matérielles, et même de la conjoncture politique. On aurait du mal à s'expliquer que les intellectuels déclarent forfait précisément à ce moment!

Notre société fait face aux mêmes défis que les autres (dépollution, reproduction de la population, réforme scolaire, concurrence économique internationale, intégration socio-culturelle, équilibre des conditions masculine et féminine, épuration de la démocratie politique...), mais elle dispose aussi de moyens comparables pour y faire face, *mutatis mutandis*. Il n'appartient qu'à nous d'imaginer, de concevoir des solutions originales aux problèmes de l'heure, de mettre en oeuvre des formes sociales, des directions de développement qui prolongent l'élan des dernières décennies et qui donnent enfin vie à nos vieux « rêves de nation. »⁶ En ce sens, ne serait-il pas à la fois souhaitable et urgent de favoriser une réflexion organisée et indépendante sur la conduite et l'avenir des affaires publiques québécoises?⁷

En marge de cette réflexion, et plus précisément de ces nouvelles finalités et orientations à concevoir, nous soumettons quelques remarques préalables :

1 Il est certain qu'il faudra définir ces orientations pour l'ensemble des Québécois

⁵ Rappelons-nous : c'était la grande période des comparaisons avec l'Ontario, qui servait d'étalon pour mesurer nos « retards » et nos avances.

⁶ C'est le titre d'un ouvrage de Susan Mann Trofimenkoff (1983), dans lequel l'auteur s'emploie à faire l'historique de nos utopies et tentatives ratées d'émancipation collective.

⁷ De manière à rassembler quelques idées directrices, des éléments d'un programme, soit un peu l'équivalent de ce que René Lévesque présentait à la presse en 1963 (R. Lévesque, 1964).

cois, de manière à ce que tous y trouvent une place, un intérêt, un rôle. Nous pensons ici aux Néo-Québécois, bien sûr, mais aussi à l'ensemble des jeunes, ces immigrants de l'intérieur, plus marginalisés que jamais.

2 Désormais, nous ne pourrions plus concevoir comme jadis l'intégration de la société québécoise : la sensibilisation et l'adhésion aux mêmes directions de développement devraient y tenir autant de place sans doute que le partage et la reproduction de vieux traits culturels.

3 Les problèmes reliés à l'intégration des immigrants renvoient—une autre fois—les Québécois francophones à une réflexion sur leur identité : quelle culture, quelle identité voulons-nous faire partager aux Néo-Québécois ? Sommes-nous bien certains que la culture (les cultures ?) que nous pratiquons est suffisamment attrayante dans le contexte de concurrence créé par le multiculturalisme nord-américain ? En d'autres mots, il est possible que nous ayons encore un peu de ménage à faire dans notre cour.⁸

4 Ces orientations que nous recherchons—et dont la crise linguistique déclenchée par le jugement de la Cour suprême en décembre 1988 a si nettement révélé l'absence—nous savons bien qu'elles ne peuvent s'improviser. On imagine plutôt qu'elles devraient se situer quelque part dans le prolongement de traits ou d'attitudes collectives, d'avantages naturels que nous avons peu à peu développés dans le passé et qui doivent bien faire partie, eux aussi, de notre identité. Par exemple, ne serait-il pas étonnant qu'aucun ressort ne subsiste aujourd'hui des habitudes et des valeurs qui ont été forgées dans la longue et dure expérience de la colonisation⁹, dans les privations et les luttes du prolétariat urbain, dans la pratique si intense et si généralisée des solidarités de type communautaire, ou dans la ferveur exceptionnelle déployée dans la croyance religieuse entre 1850 et 1960 ? Est-il naïf de supposer que ces antécédents puissent être traduits en motivations, en aptitudes, en lignes d'action, en manières de faire ?

DES PRATIQUES D'OUVERTURE

Le deuxième défi consisterait à poursuivre, en les accentuant, les pratiques d'ouverture amorcées avec la Révolution tranquille. Cette tendance est peut-être la plus remarquable et la plus décisive des trente dernières années : le néo-nationalisme a fait la preuve, en effet, qu'il pouvait s'affirmer au cœur d'une évolution qui a fait sauter pas mal de barrières, favorisant de toutes sortes de façons la promotion et la circulation des idées. Nous évoquons rapidement quatre directions où ces pratiques d'ouverture pourraient utilement se prolonger :

⁸ Pensons aux tentations « vernaculaires » dont n'arrive pas à se défaire notre langue parlée, à certaines conceptions étroites du patrimoine culturel, aux réticences face à l'apprentissage des langues

⁹ Commencée, rappelons-le, au 17^e siècle et terminée, il y a moins de 50 ans.

1 C'est d'abord la nécessité d'intensifier, à divers plans et sous diverses formes, les interactions entre la collectivité francophone et les groupes ethniques. On pense ici à l'intégration de non-francophones dans la fonction publique et parapublique, au développement d'une pédagogie dite interculturelle dans les écoles,¹⁰ à une accentuation de la présence ethnique dans les médias (non seulement comme sujets mais comme acteurs), à la promotion d'échanges et de coopérations interinstitutionnelles. Sous ce dernier rapport, l'exemple d'équipes de recherches interuniversitaires impliquant des institutions anglophones est particulièrement éclairant quant au type de rapports à cultiver. Ainsi la vocation et la place de l'Université McGill dans la société québécoise sont la source de récriminations épisodiques parmi les francophones qui voudraient voir cette riche institution servir davantage l'ensemble du Québec. Tout en reconnaissant la valeur du principe en cause, il faut aussi être attentif aux services peut-être peu visibles mais non moins précieux que peut rendre McGill du seul fait de son étroite intégration à des réseaux anglophones de recherche et d'expertise qui sont moins facilement accessibles aux francophones. Il n'appartient qu'à nous d'en tirer également avantage par le biais d'une association quelconque avec des chercheurs de McGill, dans les secteurs où ils sont les plus forts.¹¹ Il ne s'agit là, bien sûr, que d'un exemple mais il illustre bien le profit à retirer de part et d'autre d'un décloisonnement institutionnel qui respecte l'intégrité des partenaires impliqués.

2 En ce qui concerne la recherche et le développement, il n'est guère utile d'insister sur la nécessité d'identifier rationnellement les secteurs où nous voulons concentrer nos ressources, de manière à nous assurer quelques créneaux appropriés sur le plan international. Il y a peut-être une réflexion plus approfondie à poursuivre dans cette direction. Considérant, par exemple, que l'industrie des pâtes et papiers importe une très grande partie de sa technologie, on peut s'interroger sur l'opportunité de développer à titre prioritaire l'industrie aérospatiale ?

3 Sur le plan individuel, cette fois, il y a sans aucun doute plus à faire en matière d'apprentissage des langues, à commencer, bien sûr, par la langue anglaise. Ainsi, entre 1971 et 1986 (il n'y a pas de données disponibles après cette date), la proportion de francophones québécois se déclarant bilingues s'est maintenue à peu près au même niveau, soit entre 25% et 30%.¹² Mais il est prévisible que cette proportion va grimper très rapidement dans les prochaines années, si l'on en juge par les changements d'attitudes observés récemment chez les adolescents.

10 Par exemple, sur le modèle des principes et expériences discutés dans F. Ouellet (1988).

11 Les administrateurs de cette université se montrent par ailleurs très ouverts à ce genre de collaborations, McGill étant présentement impliquée dans une dizaine de centres de ce genre.

12 Chiffres tirés des recensements canadiens de 1971, 1981 et 1986 (Catalogue no. 93-153). Il est difficile d'être plus précis, à cause de difficultés méthodologiques entourant la définition des « francophones » dans les trois recensements (Communication personnelle de Réjean Lachapelle, Statistique Canada).

4 Enfin, le cadre géopolitique par rapport auquel le nationalisme québécois s'est défini traditionnellement a toujours été limité au Canada anglais et, accessoirement, aux États-Unis. Ce cadre, qui a circonscrit toutes nos "lutes nationales" jusqu'ici, représente bel et bien une autre figure de notre isolement ; il doit désormais être considérablement élargi. En effet, en Europe de l'ouest seulement (incluant la Scandinavie), on compte aujourd'hui une dizaine de collectivités nationales ayant à peu près la même taille que la population québécoise (entre 3-4 et 10 millions d'habitants) et aux prises avec des difficultés tout à fait analogues.¹³ Ces collectivités sont d'abord confrontées à tous les problèmes déjà évoqués plus haut. En outre, leur culture est menacée d'une double manière. D'abord, par la présence quotidienne des modèles et produits culturels américains, auxquels leurs chaînes de télévision et leurs salles de cinéma, en particulier, ouvrent un très large accès. Les Québécois n'ont plus raison de percevoir leur situation comme exceptionnelle en raison de la proximité des États-Unis ; cette proximité est maintenant le fait de nombreux pays. La deuxième menace vient de l'Europe de 1992. L'ouverture des frontières va créer un vaste espace culturel qui, selon toutes probabilités, sera progressivement occupé, puis monopolisé par la langue anglaise. A la longue, les langues et les cultures nationales des pays de petite taille risquent d'être satellisées, reléguées au statut de cultures et de langues secondes, par rapport au géant continental. Tel est le sentiment qui commence à se répandre parmi les intellectuels de ces pays. Du coup, ils découvrent le Québec et s'y intéressent parce qu'ils y voient l'exemple d'une culture minoritaire qui est parvenue non seulement à se perpétuer mais aussi à s'épanouir dans un environnement difficile.

A ces pays, le Québec a peut-être en effet quelque chose à apprendre au chapitre de la survivance : c'est là une matière que nous avons mal travaillée. . . . En retour, le Québec a sans doute un grand profit à retirer d'un rapprochement ou d'un « alignement » culturel avec ces collectivités plus ou moins jumelles. Ce sont des sociétés démocratiques, très développées économiquement (le Portugal excepté) et culturellement. Elles sont également très respectées sur le plan international, et nul ne songerait donc à imputer leurs préoccupations de survie culturelle à une quelconque étroitesse d'esprit ! Enfin, tout comme le Québec, et avec des moyens comparables, ces sociétés doivent apporter des solutions à la mesure de leur (petite) taille à des problèmes qui nous sont communs.

VERS UNE DEUXIÈME RÉVOLUTION TRANQUILLE ?

Le formidable désir de changements qui animait les Québécois des années 1950-70 s'était nourri à bien des sources : frustrations accumulées, engendrées

13 Il s'agit de l'Autriche, la Finlande, la Suède, la Norvège, les deux communautés linguistiques belges, la Suisse, le Danemark, le Portugal et l'Irlande.

par un vieux régime politique et social intolérant et réactionnaire, prise de conscience internationale favorisée par la Seconde Guerre Mondiale, enthousiasme suscité par des espoirs—parfois utopiques—d'action en profondeur sur l'ensemble de la société, perspectives d'enrichissement matériel et culturel. Est-il possible que cette réserve de motivations se soit aujourd'hui épuisée ? On ne peut faire à cet égard qu'un pari ou un acte de foi. Par contre, il est possible d'identifier certains facteurs qui, à l'heure actuelle, rendent objectivement possible un second élan de développement dans la société québécoise.

Parmi ces facteurs, nous avons déjà mentionné le fait que le Québec des années 1990 est une société relativement bien équipée, ayant développé de nombreux champs de compétence. En outre, cette société a fait la preuve depuis trente ans qu'une certaine conception du nationalisme pouvait se conjuguer avec l'émancipation collective et l'ouverture sur le monde. Par ailleurs, la perception de notre homogénéité comme francophones est en train de changer,¹⁴ en même temps que notre façon de penser l'intégration de la société québécoise : nous sentant moins menacés, moins fragiles, nous sommes aussi moins réfractaires aux perspectives de diversification culturelle et disposés à nuancer substantiellement l'idée que l'apprentissage de la langue française par les immigrants doit nécessairement s'accompagner d'une acculturation complète à nos valeurs, à notre identité : assurons d'abord un minimum d'intégration par le biais de la francisation ; les contenus viendront, s'élaboreront ensuite, l'expérience quotidienne vécue au contact des uns et des autres se chargeant, pour ainsi dire, d'articuler la langue à une culture commune.

Enfin, en ce qui concerne le dynamisme de la société québécoise depuis les débuts de la Révolution tranquille, nous pensons qu'il a résulté dans une grande partie d'une sorte de réconciliation qui s'est opérée au sein du Québec francophone entre les élites socio-culturelles et les classes populaires. Depuis le début du 19^e siècle, les premières ont voulu implanter ici des modèles culturels et sociaux empruntés à l'Europe, et en particulier à la France. La bourgeoisie des professions libérales surtout—incluant le clergé—rêvait d'instituer une nation catholique et française dont elle se considérait comme la titulaire légitime. Mais la population rurale du siècle dernier était largement réfractaire à cette vocation européenne de la société québécoise. La culture des campagnes, comme celle des villes naissantes, était nourrie de l'expérience du Nouveau Monde, de la "territorialité" nord-américaine. Faisant fi de la frontière entre le Québec et les États-Unis (l'ampleur des mouvements migratoires en est une preuve éloquent), elle se sentait un peu étrangère et à l'étroit dans le cadre national qu'on lui proposait. De cette relation ambiguë et contradictoire entre les élites et le peuple, nous pensons qu'il a résulté toutes sortes d'inhibitions et de malentendus (politiques notamment) qui ont contribué à freiner le changement social et culturel au Québec.¹⁵

14 Nous avons tenté ailleurs de faire le point sur ce sujet ; cf. G. Bouchard (1989).

15 Sur ce sujet, voir G. Bouchard (1885-86).

On peut interpréter sous cet angle le dégel de la société québécoise depuis trente ans. Les élites sociales et culturelles se sont largement réconciliées avec la réalité nord-américaine, sacrifiant du même coup des éléments importants de leur vieux rêve national. A l'autre extrémité, les classes populaires adhéraient peu à peu à un nationalisme articulé à l'État et inscrit dans un espace parfaitement identifié, devenu un puissant symbole de l'identité. Ainsi, le fossé entre le « mauvais » et le « bon » français s'est rétréci, est devenu objet de discussions et d'options, et les contradictions se sont atténuées entre les impératifs de la nationalité et les ambitions individuelles : il est désormais permis de choisir ses croyances et ses manières de vivre, de s'enrichir et même de déborder les frontières sans trahir la nation.

UN MODÈLE DE GESTION DES RAPPORTS ETHNIQUES ?

Les perspectives de développement qui s'ouvrent au Québec, jointes à une conjoncture économique favorable, pourraient toutefois achopper à une détérioration des rapports ethniques. De nombreux Québécois francophones en sont conscients, d'où les initiatives variées, surgies ici et là dans les derniers mois surtout, toutes axées sur la recherche de solutions ayant pour but d'établir des relations harmonieuses avec les communautés ethniques, tout en assurant l'avenir du Québec francophone. A ce propos, il semble que nous ne disposions pas encore de certaines connaissances et repères fondamentaux, indispensables pour orienter notre réflexion. Ne serait-ce que pour nous donner des références élémentaires en ce qui concerne le genre de rapports à instituer avec les non-francophones, il serait utile, par exemple, d'identifier et d'explorer plus en profondeur différents modèles de référence. Un inventaire très sommaire permet d'en reconnaître au moins cinq, en fonction de la nature et de la proximité des relations préconisées : ce sont : l'assimilation, l'intégration, le bi-culturalisme, le multi-culturalisme, la marginalisation. Présentement, ces notions nourrissent d'une manière plus ou moins explicite nos discussions, mais les contenus qu'elles recouvrent sont trop vaguement esquissés.

Dans l'ensemble, un consensus paraît se dégager parmi la majorité francophone en faveur d'une intégration passant par un apprentissage universel de la langue française (obligatoire dans le cas des allophones) et qui, pour le reste, se montre respectueuse de la pluralité ethnique. En pratique, ce modèle suppose l'unilinguisme français, avec les exceptions et les assouplissements nécessaires. On voit peu de possibilités d'entente avec les diverses communautés culturelles, si ce point de départ n'est pas acquis.

Contrairement à ce que la crise linguistique de l'hiver 1989 a pu suggérer, les volontés d'ouverture et de conciliation chez les francophones sont manifestes, autant chez les partisans que chez les adversaires de la loi 101. Les Québécois de « vieille souche » savent qu'ils doivent prendre un virage ethnique et ils sont en général d'accord pour redéfinir, en l'élargissant, leur nationalisme. Les conduites positives à l'endroit des non-francophones sont également attestées

de diverses façons: proportion croissante d'étudiants francophones à l'Université McGill (entre 20% et 30%, selon les sources auxquelles on se réfère), ouverture aux media de langue anglaise, attention sans précédent aux réalités ethniques, subventions gouvernementales aux communautés culturelles, etc. Toutes ces données vont indiscutablement dans le bon sens. Assez curieusement, toutefois, on se demande si la réciprocité existe, en particulier chez nos compatriotes anglophones.¹⁶ Il serait déconcertant que ces derniers se désistent en quelque sorte au moment même où la société québécoise, enfin parvenue à maturité, finit de liquider ses vieux complexes et entre peut-être dans une deuxième phase de développement.

CONCLUSION

En résumé, la Révolution tranquille a placé le Québec dans le peloton de tête des sociétés les plus développées, sur une sorte de ligne de départ. Le Québec de 1990 est sans doute mieux placé que jamais pour apporter quelques contributions originales—modestes, cela va de soi—au monde qui se fait, et peut-être amorcer une deuxième Révolution tranquille. Or le problème ethnique compte parmi les facteurs qui pourraient contrecarrer cette perspective, en précipitant notre société dans des luttes stériles. Nous avons suggéré, dans les pages qui précèdent, quelques directions de réflexion et d'action pour les citoyens. Il est toutefois évident que les initiatives mises en oeuvre à cette échelle sont vouées à peu de chose si elles ne bénéficient pas de l'action encadrante, éclairée et ferme de l'État, à la fois dans le but de prévenir les excès et de faire prévaloir les lignes de conduite jugées minimales pour sauvegarder le Québec francophone. Mais cette action de l'État peut n'engendrer que frustrations et désordres si elle est guidée par l'opportunisme plutôt que par une pensée politique approfondie, équilibrée et largement diffusée, ce qui ne paraît pas être le cas présentement.

Enfin, dans le contexte continental où se trouve le Québec, et compte tenu de ses données démographiques actuelles, il est certain que prendre le parti de l'ouverture—à l'intérieur et à l'extérieur—consiste à jouer quitte ou double. Mais nous avons toujours su que, s'il doit y avoir une voie québécoise de développement, ce ne peut être qu'un passage étroit. Après tout, les fleuves aussi, à leur naissance, sont toujours minces; c'est en approchant de la mer qu'ils s'élargissent...

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¹⁶ Sous ce rapport, les dernières prises de position du groupe Alliance Québec à l'occasion de son congrès annuel (mai 1989), annoncent un revirement qui risque de durcir les tensions présentes.

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Le déclin de l'empire québécois ou sont passer les minorités ?†

DEPUIS plus de 30 ans maintenant nous, les ethnies, les néo-québécois, les communautés culturelles ou au pire les immigrants sommes resté fidèle à notre statut de spectateur de notre propre avenir. Même si on nous reconnaissent une présence statistique en réalité sur le plan politique ce n'est pas jusqu'en 1980 (date du referendum) que a été reconnue notre présence au Québec. Nous avons été simplement *placer* dans le camp « des anglais ». Il faut bien le rappeler que cette identification des membres des communautés culturelles avec « les anglais » ne pouvais pas faciliter leur intégration à la société majoritaire et française. Le résultat fut la création de nouvelle contradiction tel assimilation grandissante d'immigrants d'expression française (comme les Haitiens) dans le réseau des Ecoles Protestantes du Grand Montreal—les estimations vont jusqu'a 20% de la population haitienne qui serait convertie aux écoles protestantes.

Bien sur ce fut encore les minorités ethniques qui furent accusé cette fois-ci de se comporter comme cinquième colonne. Une èspece de conspiration des minorités ethniques au Québec qui allait usurper les acquis du Québec à l'intérieur de la Confédération Canadienne. Il y en sûrement, aujourd'ui qui me trouve peut être un peut généralisant ou même provocateur. J'accepte bien sur que la situation qui définis les relations entre les minorités ethnique et la majorité est complexe. Cependant, cette reflexion est nourrie de plus de 30 années d'expérience vécu comme membre d'une minorité ethnique au Québec ainsi qu'une multitudes d'expérience professionnelles dans tous les secteurs de notre société. Pendant cette période nous avons tous été témoins d'une mutation importante de la société québécoise à tous les niveaux.

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† Présenté au colloque « Nationalisme et diversité culturelle au Québec, » Université Laval, le 7 juin 1989.

Je vais m'arrêter quelques minute sur la mutation vécu et encore très contemporaine sur le plan démographique. Mais pour le faire je vais vous imposer certaine restrictions. La première ce que vous accepter de parler du phénomène démographique pas en fésant référence au Québec dans l'Amérique du Nord mais bien du Québec qui est encore situé dans son contexte Canadien.

Nous avons été informer à nombreuse reprise de la part de différents experts d'un problème démographique au Québec. D'ailleurs l'on ne parle put au Québec de la politique d'immigration sans faire référence au supposer problème de dénatalité. Il faut rappeler nos expert que l'immigration n'a pas toujours été perçu comme une compensation de la natalité mais bien plus comme une composante du développement du Québec et du Canada « Nation builders ». Aujourd'hui on nous implore de se reproduire pour la survie de la nation même et on nous propose même la possibilité de DISPARAITRE. C'est d'ailleurs dans ce contexte que les législation limitant les droits et privilèges acquis des minorités au Québec sont justifier.

Mais quel est cette réalité et que peut-elle comporter pour l'avenir ? Avant d'essayer de répondre laissez moi d'abord vous dresser mon portrait statistique de la situation démographique.

D'abord, si l'on regarde nous remarquons que la part du Québec dans la population canadienne est loin d'être sur le point de disparition. Ainsi les données du Recensement du Canada nous révèle qu'en 1867 au jour de la confédération la Québec représentait quelque 30% de la population de la Dominion d'Amérique du Nord. Alors que Montréal, Sherbrooke et la Ville de Québec comportait des populations d'origine Britannique (incluant une proportion importantes de membre des communautés d'origine Irlandaise et Catholique) et d'autres groupes. En 1986 les francophones d'origine québécoise représentait 27% du total de la population canadienne mais cette fois la seule présence numérique importantes de minorités ethniques se retrouvait à Montréal. Pour la population d'origine Britannique (en voie de vrais disparition) il ne représentait même plus 6% de la population du Québec. Dans la majorité des Comtés qui avais souvent fait l'objet de « homesteading » par des immigrants venue des Iles Britannique il ne restait que des noms de village, de rue ou le nom de quelques montagne pittoresques si il non pas déjà été francisé.

Pendant la même période dans ce Canada « anglais » la proportion d'origine Britannique est passé de 70% de la population canadienne en 1867 à moins de 40% de cette même population en 1986. Les prévisions pour l'avenir nous indique que la proportion des « autres » va bientôt devenir majoritaire au Canada. Comme indicateur nous pouvons déjà constater les changement vécu dans les principales métropoles du Canada. En 1986 la population de Montréal comptais quelques 2,887,860 résidants dont 63,3% étaient d'origine française québécoise, à Toronto on comptais 3,339,680 résidants dont 28,5% était d'origine Britannique, et à Vancouver on comptais quelques 1,362,445 résidants dont 28,85 était d'origine Britannique.

Il est clair d'après ces données que pour le Canada « anglais » l'ère est à la

restructuration sociale, culturelle, et économique sans oublier politique. Le Canada n'est plus en voie de devenir multiculturel, multiraciale et représentatif d'une pluralité de différentes religions. Il les déjà ; à Toronto on ne parle plus de l'intégration des membres des communautés culturelles mais simplement des minorités visibles qui représente jusqu'à 20% de la population Métropolitaine de cette ville.

Par contre au Québec c'est bien le contraire qui en voie de se produire. Ainsi, au lieu de créer une société de plus en plus hétérogène nous sommes en voie de créer une société de plus en plus homogène. Déjà plusieurs villes et région, comme nous l'avons déjà dit, sont en voie de se libérer de toutes présence de communauté culturelle (Britannique et autres). C'est le cas de la Ville de Québec, Sherbrooke, Magog, etc... La francisation de ces régions et villes ce n'est pas fait par le billet de l'intégration mais par l'émigration. La venue d'immigrants d'expression française comme groupe remplaçant ne c'est pas réaliser. Un effort avec des réfugiés Indo-Chinois dans les années 80 n'a pas porté fruit. Le seul lieu où les minorités ethniques vivent en nombre important aujourd'hui c'est bien à Montréal. Et là, ils ne représentent seulement que 36 à 38% de la population dépendant des compilations que l'on utilise.

Mais, attention, déjà un cri d'alarme des forces protectrices du patrimoine a été lancé « il en a trop » et si cela continue ils sont aptes à former une majorité de la ville de Montréal (un phénomène déjà vécu à Toronto, Regina, et Vancouver depuis longtemps). La peur anticipée dans ce discours c'est que Montréal deviennent « anglicisé » un bastion des autres contre la majorité française québécoise.

Nous espérons que les planificateurs sociaux nos représentants politiques et autres ne répondent pas à ceux discours en accentuant les barrières existantes entre les membres des communautés culturelles et la majorité. Car si cela était pour ce produire les conséquences pour le Québec et le Canada serait très graves. L'augmentation des tensions politiques et l'accentuation des tensions intercommunautaires et inter-ethnique peuvent que accélérer le processus d'homogénéisation du Québec.

On peut penser, que dans un avenir assez proche que le Québec se retrouve avec une population qui est à plus de 90% d'origine française québécoise. Cela pourrait avoir de sérieuses conséquences sur la composition du Parlement, du Cabinet et de la Cour Suprême. En même temps Montréal qui fut jadis la plus grande métropole du Canada serait réduit au troisième rang après Vancouver, Toronto et une Ville de Winnipeg en plein accroissement. Il serait alors difficile pour le Québec de maintenir sa place et son rôle à l'intérieur de la Confédération canadienne. Déjà nous sommes témoins de la crise qui se développe sur le projet de ratification constitutionnelle dans l'Accord du La Meech qui portent principalement sur la question de la défense des droits acquis des minorités au Canada.

Pour tous les québécois quel que soit leurs origines la situation présente est cruciale. Les choix politiques, l'esprit d'ouverture doit être établis dans les

années qui viennent. Lysianne Gagnon, journaliste à La Presse, nous à informer lors d'un récent Débat organisé par le Cégep du Vieux Montréal et SOS Racisme que la voie de l'intégration des communautés culturelles passe d'abord par l'intégration de la minorité d'origine Britannique. Elle pensait que si le Québec ne peut intégrer sa contre-partie, à savoir l'autre peuple fondateur, la voie des communautés culturelles au Québec vas être très difficile.

Jusqu'à présent et cela est ma propre constatation, le Québec et surtout le leadership et intellectuel du Québec n'a pas défendu les intérêts des francophone québécois sans enlever des droits aux minorités. Cela ne se retrouve pas seulement dans les lois, la politique mais encore beaucoup plus dans le manque d'ouverture institutionnelle. Vivre français au Québec se résume pour l'instant à vivre comme un québécois « pur laine ». Cela ne peut être un schéma de société dans un contexte Canadien qui reconnais la contribution des immigrants dans l'histoire de son développement tel incarner dans l'Article 27 de la Constitution.

Le mythe de « minorité francophone en Amérique du Nord » est en voie de se réalisé avec cela que l'on peut comprendre comme étant une homogénéisation grandissante de la société québécoise. Il faudra attendre l'avenir pour voir si c'est le chemin que la majorité des québécois on choisi. Je vais finir avec un extrait d'un article écrit dans une collaboration spéciale pour La Presse (22-02-89) par Monsieur Jean-Paul Desbiens intitulé « Qu'est-ce que la culture québécoise ? ». Parlant de la politique d'immigration il nous explique que :

C'est de la culture qu'il s'agit. Or, on à déjà vidé la culture québécoise, de son contenue, pur ne plus s'inquiéter que de la langue. Certes la langue est un élément de la culture, mais elle n'est pas toute la culture. A supposer même qu'a force d'immigrants on puisse dénombrer dans une ou deux générations six ou huit millions de francophone à l'intérieur du territoire québécois, ces millions de francophone ne porterais pas la culture québécoise ; ils porterais la leur ou les leurs ... Depuis une génération, la culture québécoise s'est vidée de sa masse, de ses porteurs. En refusant l'enfant avant par la pilule ; pendant par l'avortement ; après par le divorce et la garderie ; la culture québécoise à réduit ses sujets porteurs à une proportion déficitaire et déraciner.

Le difficile équilibre entre droits individuels et droits collectifs[†]

ON PEUT PARLER des droits de la personne de différents points de vue. On peut le faire d'un point de vue philosophique ou encore politique. On peut parler aussi des droits de la personne selon le droit naturel, mais on peut également centrer son attention sur le droit positif, c'est-à-dire sur les droits de la personne dont les cours de justice sont en mesure d'assurer une mise en oeuvre efficace dans un régime constitutionnel où la règle de droit encadre le vouloir des gouvernants.

DROITS DE LA PERSONNE, DROIT POSITIF ET CHARTES DES DROITS

Du point de vue du droit positif, les droits de la personne sont essentiellement des droits individuels, c'est-à-dire des droits civils et politiques, par opposition aux droits collectifs que sont les droits sociaux, économiques ou culturels. Il en est ainsi de par la nature des choses ; c'est que les premiers peuvent être mis en oeuvre grâce à une intervention judiciaire qui, au nom de l'individu, arrête l'action des gouvernants, alors que les seconds exigent, au contraire, une intervention des gouvernants au nom de la collectivité ou d'une collectivité. Les droits à l'égalité, à la liberté et à la justice, qui résument ce que sont les droits individuels de la personne, peuvent, en effet, s'exprimer efficacement par le biais de jugements de cours qui condamnent les règles de droit qui portent atteinte à l'une ou l'autre de ces valeurs. Alors qu'en revanche, la mise en oeuvre d'un droit à l'éducation, à l'environnement ou à la santé postulent au

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contraire un vouloir politique exprimé à l'aide de mesures financières et normatives qui ne peuvent relever du pouvoir judiciaire.

C'est pour cette raison, d'abord et avant tout, que les Chartes des droits de la personne que nous retrouvons dans le droit positif canadien et québécois portent essentiellement sur les droits individuels de la personne. Du moins en est-il ainsi pour leur partie juridiquement efficace, celle dont on peut poursuivre la mise en oeuvre devant les tribunaux. La Charte québécoise, par exemple, comprend un chapitre consacré à certains droits économiques et sociaux, mais ce chapitre est demeuré plus ou moins lettre morte, et, en ce sens, il ne fait pas tellement partie de notre droit positif. Autrement dit, les Chartes des droits ne sont efficaces en droit que dans la mesure où elles visent les droits individuels. Énoncer dans une Charte le droit au travail n'améliore pas plus le sort des chômeurs qu'énoncer le droit à la sécurité culturelle n'est de nature à rassurer les Québécoises et les Québécois sur leur avenir.

CHARTES DES DROITS ET PROGRÈS SOCIAL

L'émergence récente des droits de la personne par le biais des Chartes exprime, donc, un choix en faveur des droits individuels. Ces droits individuels existaient déjà dans notre droit avant l'avènement des Chartes. Mais leur sort ultime était jusque-là laissé entre les mains des parlements, fédéral ou provinciaux, selon le cas.

L'avènement des Chartes, surtout de la Charte canadienne en 1982, a eu pour effet d'enchâsser ces droits individuels dans la Constitution, de sorte qu'il appartient désormais aux tribunaux et non plus aux parlements de décider si l'action des gouvernants enfreint le droit de l'individu à la liberté, à l'égalité ou à la justice. Les Chartes nous ont fait passer subitement d'un régime constitutionnel de tradition britannique, fondé sur le principe de la souveraineté parlementaire, à un régime de type américain caractérisé par l'interventionisme judiciaire. Le tout sans grand débat, sans préparation et sans aménagement institutionnel.

Cette mutation constitutionnelle n'est pas en elle-même condamnable. Elle puise dans notre héritage chrétien l'idée fondamentale voulant que ce soit la personne à l'échelle individuelle qui importe avant toute chose. Le bien-être collectif ne devrait pas permettre d'accabler l'individu ; rien ne devrait justifier la torture. Les droits de la personne, donc, braquent l'agir des gouvernants sur l'essentiel : le bonheur de chaque individu.

En revanche, il ne faut pas perdre de vue le fait que les droits de la personne ne sont que des droits négatifs, qui ne font qu'attribuer un veto au pouvoir judiciaire. Ils permettent que l'intervention des gouvernants puisse être empêchée ou arrêtée, mais ils ne sont aucunement de nature à assurer le progrès social. La décision récente de la Cour suprême dans l'affaire *Borowski* le démontre bien : en l'absence d'intervention gouvernementale à juger, la Cour ne pouvait se prononcer utilement sur le statut du fœtus.

Les droits de la personne peuvent empêcher le pire : ils sont en conséquence essentiels ; mais ils ne peuvent engendrer le mieux. S'ils peuvent protéger l'individu contre la torture, ils sont, en revanche, impuissants à améliorer le sort des minorités, des défavorisés, des handicapés.

Les droits de la personne sont de la nature d'un remède ou d'un système immunologique, dont il faut savoir user avec retenue. Sans quoi ils sont voués à produire des effets inverses de ceux recherchés. Utilisés dans un climat d'excitation avocassière ou de vedettariat judiciaire, les droits de la personne deviennent vite les droits de ceux qui en ont le moins besoin, mais qui en ont les moyens. Ils créent paradoxalement une société rugueuse, faite de droits, mais absente d'obligations, où il fait bon vivre en présence de son avocat.

Pour éviter la banalisation, sinon le détournement des droits de la personne, il faut donc que ceux-ci soient définis et appliqués avec circonspection. Il importe, au plus haut point, de bien savoir, dans chaque cas, de quoi il s'agit au juste. Car, plus souvent qu'autrement, l'action qu'on veut empêcher, ou la règle de droit qu'on veut casser au nom d'un droit de la personne, poursuivent elles-mêmes des buts qui rejoignent d'autres droits de la personne. Les droits de la personne ne doivent pas devenir l'instrument d'une idéologie libérale se satisfaisant du seul fait de l'inaction des gouvernants.

Nos Chartes des droits prévoient trois moyens de procéder à cet équilibrage entre droits individuels et droits collectifs : la définition intrinsèque des droits, la clause générale d'interprétation des droits et, enfin, la dérogation expresse aux droits.

LA DÉFINITION DES DROITS DE LA PERSONNE

La définition des droits des Chartes devrait découler de l'identification de l'objectif que leur enchâssement semble avoir voulu atteindre. Cette approche téléologique des droits a été plusieurs fois promue par la Cour suprême. En pratique, cependant, il semble que ce soit plutôt le principe simple de l'interprétation libérale qui ait surtout guidé les juges. Ces derniers donnent en effet aux droits la définition la plus large qu'il soit raisonnablement possible de leur donner.

L'article 7 de la Charte canadienne énonce le droit au respect des principes de justice fondamentale. La question s'est posée de savoir si cette justice fondamentale réfère seulement à la procédure de mise en oeuvre du droit ou si elle permet aussi de contrôler la teneur substantive du droit. Bien qu'il ait été parfaitement clair que, pour les auteurs de l'article 7, l'expression « justice fondamentale » ne visait que le droit procédural, la Cour suprême a décidé le contraire, sciemment. Ce qui fait que tous les tribunaux du pays sont maintenant autorisés à se demander, au sujet de toute règle de droit ou action gouvernementale, si cette dernière est juste. Rien de moins ! Il n'est donc pas tout à fait correct de prétendre, comme le font souvent les juges, que le fardeau judiciaire découlant des Chartes leur a été entièrement imposé.

La Cour suprême, de même, a jugé que la liberté d'expression, énoncée à l'alinéa 2b) de la Charte canadienne et à l'article 3 de la Charte québécoise, comprend le droit de faire de la publicité commerciale. Une recherche attentive des finalités généralement recherchées par une liberté d'expression consignée dans la Constitution d'un pays aurait pu, il me semble, conduire à une autre conclusion. La Cour a plutôt préféré suivre en cela la jurisprudence américaine et le principe de l'interprétation libérale. Sur cette question, comme sur plusieurs autres concernant les droits de la personne, la Cour suprême du Canada s'est un peu comportée comme si ses décisions étaient susceptibles d'être cassées par la Cour suprême des États-Unis.

Ce qui dérange le plus dans ces définitions débridées des droits de la personne, ce n'est pas tellement le fait que le pouvoir judiciaire s'en trouve augmenté; c'est plutôt, en réalité, l'idéologie qu'elles incarnent, de façon consciente ou inconsciente. Ces définitions des droits consacrent, en effet, dans une certaine mesure, l'idée que les droits de la personne protègent non seulement la personne elle-même mais encore les droits économiques des personnes. Or cette façon de voir, qui ne peut qu'accentuer l'incidence intrinsèquement stérilisante des Chartes au plan du progrès social, ne correspond pas du tout à l'intention des auteurs des Chartes. On a choisi délibérément de ne pas inclure dans la Charte canadienne le droit à la libre jouissance de la propriété et, dans le cas de la Charte québécoise, ce droit n'existe que « dans la mesure prévue par la loi. »

L'INTERPRÉTATION DES DROITS DE LA PERSONNE

L'idée de définir largement les droits de la personne pourrait se concevoir si elle se complétait, sur le terrain, d'un processus menant à une interprétation nuancée et circonstanciée de ces droits. Or tel n'est pas le cas, bien au contraire.

Les Chartes canadienne et québécoise comportent toutes deux des clauses qui, à première vue, pouvaient apparaître comme des indications données aux juges d'interpréter les droits de la personne en tenant compte des valeurs poursuivies par les règles de droit qui se trouvent à produire involontairement des effets négatifs sur quelque droit de la personne. La Cour suprême, malheureusement, traite ces clauses comme s'il s'agissait de moyens donnés aux gouvernants de contourner volontairement les droits de la personne. Elle considère, en effet, que toute atteinte aux droits individuels, si involontaire fût-elle, est une infraction ou une violation de ces derniers. Et en conséquence, et en toute logique dans son illogisme, elle fait porter sur les seuls gouvernants l'entier fardeau de prouver la justification des règles de droit qui produisent des effets sur les droits individuels à la liberté, l'égalité ou la justice.

Ces clauses, qui veulent que les droits de la personne ne soient pas interprétés dans l'abstrait, posent un critère de raisonabilité; elles permettent que les droits de la personne se trouvent limités par des règles de droit, dans une mesure qui soit raisonnable et justifiable dans une société libre et démocratique. Or la

Cour suprême, si étonnant que cela puisse paraître, considère ce critère de raisonnabilité comme étant l'équivalent d'un critère de nécessité. Elle exige des gouvernants la preuve que les lois et règlements qui affectent les droits individuels sont nécessaires et non pas seulement raisonnables. Ce faisant, elle confie aux tribunaux un pouvoir que les auteurs des Chartes ne leur ont jamais attribué. Les concepts de nécessité et de raisonnabilité sont fondamentalement différents l'un de l'autre : une règle de droit peut fort bien être raisonnable sans être nécessaire. L'incidence négative des droits de la personne sur le progrès social s'en trouve encore une fois augmentée d'autant.

LA DÉROGATION EXPRESSE

Les Chartes canadienne et québécoise des droits contiennent aussi des clauses qui permettent aux législatures de déroger expressément aux droits de la personne qu'elles énoncent. Manifestement, il ne s'agit plus ici de faire faire par les tribunaux l'équilibre entre les droits de la personne et les autres règles de droit, c'est-à-dire entre les droits individuels et les droits collectifs. La dérogation expresse, au contraire, permet au parlement de faire triompher sa volonté, quelqu'en soit l'impact sur les droits individuels. Pour certains, il s'agit là d'une aberration. Tel n'est pas mon avis, tout au moins dans le contexte canadien, et à plus forte raison dans le contexte québécois.

Le Canada est la fédération de dix provinces, fort différentes les unes des autres. Au sein du pouvoir central issu de cette union, il appert qu'on oublie souvent cette réalité première. Lorsqu'elles ont formé la fédération, ces provinces ont choisi de conserver les pouvoirs qui leur étaient nécessaires pour continuer de se développer à leur manière en certains domaines. Or l'enchâssement des droits de la personne dans des Chartes constitutionnelles a pour effet, en substituant la souveraineté judiciaire à la souveraineté parlementaire, d'uniformiser et de centraliser les valeurs sociales à l'échelle d'un Canada uni et non plus fédéré. La raison en est que le pouvoir judiciaire ne connaît pas du tout au Canada la décentralisation fédérative que connaissent les pouvoirs législatif et exécutif. Il n'y existe, au contraire, qu'une hiérarchie judiciaire, fortement dominée par l'exécutif fédéral, et à la tête de laquelle se situe la Cour suprême du Canada, institution purement fédérale siégeant à Ottawa. Dans un tel contexte, conserver aux provinces le pouvoir ultime de rétablir la démocratie parlementaire aux fins de l'équilibre des droits individuels et des droits collectifs dans les domaines de compétence provinciale relève de l'instinct de survie plutôt que de l'aberration. Si l'on tient compte de l'activisme manifesté jusqu'ici par la Cour suprême en matière de droit de la personne, il ne s'agit pas du tout ici de savoir si les provinces peuvent, par dérogation expresse, pratiquer allègrement la torture, mais bien plutôt de savoir si elles peuvent encore protéger certaines valeurs sociales et culturelles propres.

Ce qui vaut pour l'ensemble des provinces prend évidemment un relief singulier dans le cas du Québec. La vulnérabilité culturelle du Québec fait de

l'existence des clauses de dérogation dans nos Chartes des droits des éléments essentiels de l'équilibre minimal qui doit exister dans un tel cas entre les droits individuels et les droits collectifs. L'option contraire exprimerait, de la part de la collectivité québécoise, rien d'autre qu'une résignation suicidaire. Comment une minorité fragile pourrait-elle choisir d'abandonner ce qu'elle a de plus précieux : pouvoir, sur des questions vitales, décider démocratiquement comme une majorité plutôt que de s'en remettre au bon vouloir d'autrui ?

La Cour suprême semble avoir compris le sens de cette institution qu'est la dérogation expresse. Contrairement à la Cour d'appel, elle n'a pas cherché, en effet, à en rendre l'usage difficile. En revanche, la persistance, dans certains quartiers, d'une volonté aveugle de faire disparaître la dérogation expresse, ne manque pas de laisser planer sur la sécurité du Québec dans la fédération canadienne un doute angoissant.

Pour une notion renouvelée de citoyenneté[†]

« Des richesses et pauvretés relationnelles, qui attirent aujourd'hui l'Économie hors de sa première histoire et montrent que si l'Économie n'était que d'argent, les êtres seraient pauvres. » (*Maurice Obadia*)

INTRODUCTION

CERTAINS RACCOURCIS hantent les débats sur l'ethnicité et la culture au Québec. Ils ont conduit certains intervenants à définir des positions essentialistes qui « fossilisent » une réalité fondamentalement mouvante et en évolution constante (Drummond 1981-2). Cette approche a un effet paralysant sur les débats puisqu'elle présume une certaine incommensurabilité des manières d'être. L'essence est exhaussée et les relations bannies (Paquet 1989b).

Une approche plus ouverte reconnaît le caractère fluide et, en grande partie, construit de l'ethnicité et de la culture, et redonne aux relations entre individus et entre groupes leur centralité. C'est cette voie que nous avons choisie. En effet, il nous apparaît que c'est seulement dans ce réseau interactif qu'on peut comprendre les forces qui définissent la culture et l'ethnicité et leur donnent à la fois spécificité et dynamisme.

Ce gambit porte à conséquences. D'abord, la notion d'identité y perd son univocité : les personnes ont à tout moment des identités multiples et limitées qu'elles se sont forgées au fur et à mesure de leurs expériences. Ensuite, l'essence de la culture tient moins à certains traits homogènes qu'à un « système

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† Présenté au colloque « Nationalisme et diversité culturelle au Québec », Université Laval, le 7 juin 1989. Le questionnement de Gérard Bouchard, les commentaires de Clinton Archibald, Ernest Caparros, Gérard Dion et Paul Laurent, ainsi que l'aide de Frank S. Jones, de Marc Racette et de Marie Saumure, ont été appréciés.

de différences partagées que ses membres reconnaissent » (Drummond 1981-2). Finalement, aucun mécanisme auto-régulateur immanent n'assure la stabilité ou la permanence ; on est donc renvoyé à un autre ordre de valeurs pour régler ce système et son évolution.

Cet autre ordre de valeurs, nous le situons au niveau de la citoyenneté. Il nous semble en effet que c'est seulement à ce niveau qu'on peut espérer calibrer les identités multiples et partielles et en arbitrer les inter-tensions. Une notion renouvelée de citoyenneté s'avère nécessaire pour relativiser les visions essentialistes et primordialistes de l'ethnicité et de la culture et gérer les interactions entre cultures d'une manière créatrice.

Le Québec est en train de vivre une dérive vers une nouvelle notion de citoyenneté en tant que mode de gestion des rapports inter-ethniques. Il s'agit là d'un modèle dont s'inspirera probablement le Canada quand son multiculturalisme aura enclenché une situation telle que de nouvelles règles du jeu social s'imposeront.

CENTRALITÉ DES RELATIONS

Les travaux conventionnels sur l'ethnicité et la culture sont le plus souvent primordialistes : ils considèrent l'identité ethnique ou culturelle comme une constellation donnée de traits d'un individu ou d'un groupe. Ce n'est pas le cas pour les économistes qui suggèrent plutôt une version optionaliste : pour eux, l'ethnicité ou la culture peuvent être modifiées selon les circonstances (Matthews 1984). Pour ces derniers, l'idée d'identité culturelle ou ethnique—« the whole constellation of values, attitudes, skills and contacts that many call a culture »—n'est rien d'autre qu'un autre nom pour un certain type de *capital humain* (Sowell 1981). Les cultures diffèrent : elles sont plus ou moins bien adaptées aux circonstances, et ceux qui ont la sorte de capital humain qui convient réussissent.

Il s'agit là de positions extrêmes : l'ethnicité et la culture ne relèvent ni totalement du sort ni totalement du choix. L'hypothèse la plus raisonnable est que ethnicité et culture sont « le résultat d'une démarche interactive et créatrice . . . une *persona* que l'on forge au fur et à mesure que l'on vit et pense au milieu de concitoyens » ; voilà qui permet à « l'intersystème ou continuum culturel de l'identité ethnique » de se construire : les groupes ethniques dans une société multi-ethnique ne se définissant pas comme des « unités stables mais bien des continuums mouvants » (Drummond 1981-82). C'est dans les relations entre citoyens et entre groupes qu'on peut ausculter cette mouvance. Ce qui conforme l'identité ethnique ou culturelle, c'est la dynamique des jeux inter et intra-groupes i.e. le réseau de relations qu'ils nouent.

La richesse et la densité des relations sont souvent émasculées dans les travaux des économistes conventionnels : ils réduisent la trame de la socio-économie à une soie tissée par des monades rationnelles indépendantes reliées entre elles par le seul réseau d'information signalétique que constituent les prix.

Les relations dégénèrent en simples transactions. Même les travaux de certains néo-institutionnalistes, pourtant moins réductionnistes, classifient simplement les transactions *soit* comme inspirées par le planificateur ou négociées entre les parties en présence *soit* comme poussant organiquement : dans le premier cas, la relation émerge d'une rationalité instrumentale claire, c'est un outil d'optimisation ; dans l'autre cas, elle émerge spontanément du comportement de maximisation des agents économiques sans pourtant être planifiée ou même souvent sans qu'on réalise sa présence. Dans les deux cas, cependant, règles ou conventions—i.e. des formes de relations stylisées—incarnent et guident les interactions entre agents rationnels (Schotter in Langlois 1986).

La socio-économie est pourtant bien davantage qu'un jeu de transactions marchandes émergeant directement ou indirectement de négociations entre individus ayant défini leurs objectifs indépendamment. La trame ethno-culturelle d'une socio-économie, par exemple, est un autre ensemble de relations qui sert de soubassement aux activités contractuelles—sorte de prérequis au bon fonctionnement du système. En fait, le fonctionnement du marché dépend de toute une ribambelle de normes et de conventions non-marchandes—confiance, sens des obligations, réciprocité, normes etc. qui sont les prérequis pour que l'économie individualiste et contractuelle fonctionne (Hirsch 1976 ; Paquet 1977a, 1977b). Ce soubassement—qu'on pourrait nommer avec James Coleman *capital social*—est un ensemble de relations entre personnes qui facilitent l'action par les acteurs socio-économiques et par là même conformément les directions que prend cette action jusqu'à un certain point (Coleman 1988).

Conventions et règles ne sont donc pas exclusivement le fruit fonctionnel—déliéré ou organique—d'efforts pour régler les activités directement productives. Elles peuvent aussi contribuer aux activités productives, d'une façon indirecte, par la mise en place d'une sorte de capital culturel-symbolique pour la société, une sorte de soubassement socio-culturel, d'éthos, d'ordre symbolique qui a des effets importants sur la nature de la prise de décision et sur le dynamisme de la société (Gans 1979 ; Breton 1984, Paquet 1989a).

La société civile produit du « capital social » : cette production privée prend sa source dans la prise de conscience d'une certaine incomplétude organisationnelle ou institutionnelle qui paraît coûteuse (Leibenstein 1987). Des relations du type « capital social » à la Coleman servent aussi de refuge face à l'aliénation, l'anomie, l'exploitation, refuge qui recrée des intimités, des instincts, des sentiments, des émotions intégrantes et structurantes (Novak 1972 ; Obadia 1983). Mais la production privée de ce soubassement demeure insuffisante. C'est que ce capital social au sens de Coleman a un certain caractère de bien public, une matérialité publique d'usage : il est porteur d'actions socialement rentables et d'effets externes qui ne sont pas appropriables par les individus à des fins personnelles. Voilà qui explique la tendance des individus et des groupes à sous-investir dans ce genre de capital et la nécessité souvent pour l'Etat de mettre en place des politiques pour suppléer au manque à investir dans les infrastructures socio-culturelles.

SCHEMA I Radiographie des règles et conventions

	Activités matérielles	Soubassement symbolique
Actions privées	A	B
Actions publiques	C	D

On peut classer rapidement règles et conventions selon qu'elles portent sur la modulation des activités matérielles *ou* qu'elles contribuent à mettre en place le soubassement immatériel de l'appareil socio-économique (i.e. qu'elles font partie des frais généraux) *et* selon qu'elles sont le fruit émergeant de contrats ou ententes individuels explicites ou implicites *ou* sont le résultat de gestes collectifs.

Personne ne contesterait la nécessité de ce genre de soubassement dans le cas des activités matérielles—l'ordre monétaire en C est nécessaire au bon fonctionnement en A—mais on ne reconnaît pas aussi facilement qu'il est tout aussi nécessaire de mettre en place un ensemble de droits, responsabilités, normes, standards (par des actions privées en B et par des actions publiques en D) pour préserver ou renforcer le soubassement symbolique. C'est là que se pose le problème de l'identité ethno-culturelle. Car il n'existe pas d'identité collective créée : il y a procès d'identification active en termes d'appartenance, de référence, etc. Cette identité par identification relationnelle s'inscrit dans le procès social défini par les règles et conventions—un procès social qui est aussi le terrain des conflits interethniques (Galissot 1987).

Il serait naïf de croire que l'identité ethno-culturelle émerge de façon spontanée et organique en B : elle émane en partie de la société civile comme autant de conventions ou d'engagements auxquels on est arrivé dans le grand jeu social, mais l'État va, par la mise en place des infrastructures, la provision de biens publics, et le bon usage de la coercition, créer et soutenir l'ordre symbolique, « l'état d'esprit approprié ». En fait, le plus souvent, c'est tout un mélange d'actions privées et publiques qui vont conformer connaissances, perceptions, cadrages—le *forum*—et l'ordre symbolique qui le soutient (Tushman 1977).

RADIOGRAPHIE DE LA SOCIÉTÉ MULTIETHNIQUE

Une socio-économie est un processus institué, i.e., un tissu de relations, règles, conventions et contrats tissant la trame d'un système qui intègre un groupe d'agents. Ces relations, règles et conventions peuvent être de toutes origines et de formes diverses : le dosage des composantes A, B, C, D définit la trame de systèmes socio-économiques différents selon la valence de chaque composante.

Dans toute société, l'interface entre les groupes façonne l'identité ou les identités, le ou les genres de vie, i.e., la personnalité de cette société. Cepen-

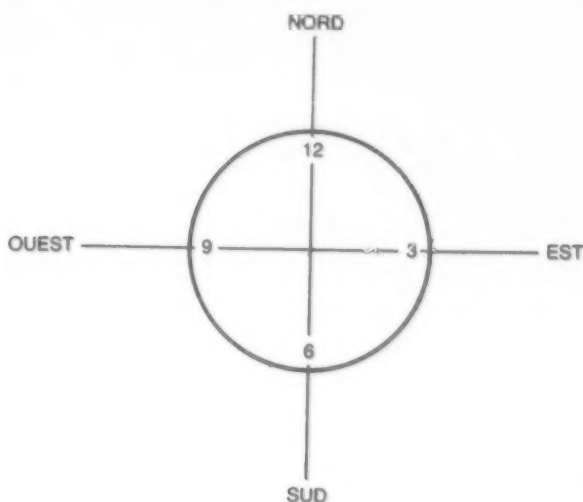
dant dans les sociétés multi-ethniques, cet interface est plus accidenté et la personnalité de la société souvent plus difficile à forger. Trois séries de forces conformément cet interface : (1) les fondements socio-techniques [contraintes géo-techniques, outillages physique et mental, etc.], (2) l'organisation et la structure de rôles en place [structures formelles et informelles, *habitus*, modes de fonctionnement, etc.] et (3) la théorie, i.e., les représentations que les divers groupes ont des buts du système socio-économico-culturel, de son fonctionnement, de son environnement et de son avenir (Schon 1971). Ces trois composantes sont en interaction continue : tout changement dans l'une entraîne des ajustements dans les autres. Une société, à tout moment donné, est en fait définie par une sorte de quasi-équilibre toujours précaire entre ces forces.

On a trop généralement radiographié les sociétés multi-ethniques strictement en termes physico-techniques, socio-démographiques ou politico-légaux sans reconnaître que le facteur dominant est souvent au niveau des représentations. Il ressort en effet des « théorisations » qu'une société articule de soi des spécialisations déterminées par l'identité, des patterns de transactions et de relations qui ne sont nullement dictés par la technologie ou les rapports socio-politiques mais par la « théorie » et qui misent sur le tacite et l'idiosyncratique (Ben-Porath 1980).

Il nous est apparu essentiel de privilégier les dimensions « théoriques » dans notre radiographie de la société multi-ethnique parce que c'est à ce niveau que se fabriquent les représentations, que se crée l'identité. C'est que, pour avoir une socio-économie calme et prospère, il faut que la société multi-ethnique réussisse à bâtir un certain degré de compatibilité entre les « théories » officielles de l'État et celles qu'articulent et vivent les divers groupes. Il ne suffit pas pour le Chef de l'État d'affirmer que l'identité canadienne est «... la diversité... la tolérance ; le respect de l'autorité, des droits de la personne et des libertés civiles ; un amour profond de la nature et un souci constant pour la qualité de l'environnement » (Mulroney 1989) pour que ce soit le cas.

Il faut que bon gré mal gré l'accord se fasse autour d'une représentation ou de représentations considérées comme dominantes et qu'en sortent des conventions ou standards de comportement, si l'on veut que la coordination nécessaire à une société stable et prospère s'ensuive. Il ne faut pas en effet que les consciences actives de particularités dégénèrent en revendications de singularités—singularités ethno-culturelles qui ambitionnent vite de devenir singularités politiques (Guinard 1987). Il faut donc miser sur la possibilité de construire une certaine entente sur ce que nous nommerons plus loin des règles d'acquisition d'une citoyenneté progressive et syncrétique au plan ethno-culturel. Il s'agit là d'une entente qui peut fort bien se faire sur des règles du jeu ou conventions qui ne sont pas optimales—la semaine de sept jours n'est pas nécessairement un optimum—mais qui fonde et stabilise les attentes et reconnaît un « système de différences partagées » (Leibenstein 1987).

Dans un monde d'identités multiples et contrastées, d'identités en formation et en décomposition, il est improbable que cette « mutualité » naisse organique-



SCHEMA II Coordonnées des relations socio-ethniques

ment. Une notion progressive et initiatique de citoyenneté qui voudrait donner l'heure juste au plan ethno-culturel devient elle-même une convention qui tend à harmoniser bien imparfaitement les diverses représentations. C'est celle sur laquelle on se met d'accord temporairement parce qu'elle permet à chacun de bâtir sur une certaine stabilité et ce même si c'en est une qui est loin de la règle d'or.

Il n'est pas facile de prendre le pouls de ce genre de visions du monde qui « théorisent » d'une manière synthétique une société multi-ethnique et en définissent la trame, mais ce n'est pas impossible. Nathan Glazer a suggéré une stylisation simple qui nous a paru utile (Glazer 1983). Pour notre usage, nous avons aménagé ses trois modèles explicites en quatre « théorisations » plus ou moins attachées aux quatre points cardinaux : Est, Sud, Nord, Ouest.

Les patterns de relations inter-ethniques ou inter-culturelles concrètes ne se réduisent pas évidemment aux stylisations polaires. Les patterns sont la plupart du temps complexes et changeants. On peut représenter une société multi-ethnique ou suivre la dynamique de l'évolution d'une socio-économie en particulier sur un genre d'horloge où le NORD est à midi, l'EST à trois heures, le SUD à six heures, et l'OUEST à 9 heures. On voit la possibilité de combinaisons simples (SUD / OUEST ou à 8 heures) ou mixtes (combinant des éléments de deux modèles, NORD / SUD par exemple, comme midi et demi) qu'on peut utiliser pour représenter diverses façons de gérer les relations inter-culturelles ou inter-ethniques.

Pour bien comprendre la nature des stratégies mixtes ou complexes, il est important cependant de préciser le contenu des modèles polaires.

Le modèle EST n'est pas retenu explicitement par Glazer car il semble que pour lui ce soit une situation de transition. Il s'agit cependant d'un phénomène qu'il mentionne explicitement en passant : la culture ou l'ethnie réceptrice se perçoit comme absorbante et assimilatrice. Il y aura donc, selon cette vision du monde, acculturation et absorption à plus long terme. C'est un modèle auquel libéraux et nationalistes ont aspiré dans les débuts des colonies américaines et jusqu'au cœur du 19^e siècle, mais qui aujourd'hui a une saveur utopique.

Le modèle SUD est celui d'une société coupée en deux où les lignes de démarcation sont tirées de manière rigide par la coutume, la violence ou le droit. Une fois les groupes nommés, les individus sont définis : ils peuvent être gratifiés ou non par la démarcation et l'appartenance qui s'ensuit. C'est une société où les deux pans ont des rythmes de vie scandés différemment.

Le modèle NORD est une vision concurrentielle des groupes sociaux. La fragmentation est telle que les différences deviennent pulvérisées—fluides et toujours temporaires parce que liées à la richesse, au pouvoir, à l'éducation, aux valeurs. En conséquence la société demeure ouverte : la multiethnicité est un continuum et en ce sens la société reste commune.

Le modèle OUEST est une version balkanisée de la société : elle est définie pour une multiplicité de groupes qui ne s'inscrivent plus dans un continuum multi-ethnique. Il y a fragmentation, multiplication des droits de ces groupes divers et croissance de la distance entre eux à proportion que leurs identités fondent des patterns symboliques et matériels sur lesquels s'érige une spécialisation nouvelle, une nouvelle division sociale du travail.

Ces divers modèles ont été élaborés à partir d'une vision américaine des choses et les coordonnées géographiques, sans être exactes, soulignent la diversité des modèles et perceptions qui ont eu cours, ou qui ont cours, aux États-Unis : depuis les plans d'assimilation dans l'EST au début, jusqu'aux lotissements socio-culturels dans l'OUEST en passant par les aventures fort diverses au SUD et au NORD. Mais cette stylisation est exportable hors ce cadre d'origine. On peut ainsi représenter la situation ou l'évolution de sociétés diverses selon ce qu'elles considèrent à un moment donné comme l'heure théoriquement juste au plan des rapports inter-culturels et inter-ethniques.

La notion d'heure juste évolue dans le temps comme dans l'espace. C'est souvent le résultat de perturbations dans l'environnement : des sociétés « méridionales » éclatent sous la pression de flux migratoires divers, des sociétés « septentrionales » glissent vers des patterns « occidentaux » et tout au long de l'histoire on va voir mourir lentement les espoirs de sociétés « orientales » qui en arrivent à toutes enregistrer l'impossibilité de la stratégie d'assimilation.

Si l'évolution de l'Amérique du Nord s'est faite en direction du modèle OUEST, au Canada, il y a un effort pour infléchir l'interface des cultures vers le SUD-OUEST : cela appelle un effort pour construire une citoyenneté à la mesure

de ce projet i.e. une citoyenneté capable de réconcilier les diversités multiples qui marquent le Canada tant au plan symbolique que socio-matériel, mais dans une perspective bilingue. En faisant du multiculturalisme un concept fondateur de la société canadienne, le gouvernement du Canada a renforcé la conscience ethnique et accru le coefficient d'hétérogénéité du Canada (Canada 1987; Cairns 1988; Paquet 1989a). C'est une conséquence non-voulue et non-prévue peut-être mais non moins inéluctable. D'autre part, au Québec, les remparts pour protéger le français ont été renforcés. Ces deux tendances ont poussé le Canada et le Québec dans la même direction: le SUD-OUEST, modèle de balkanisation teinté de dualisme méridional.

RAPPORTS ETHNO-CULTURELS AU QUÉBEC

Ce n'est pas le lieu pour faire l'histoire des relations ethno-culturelles au Québec: sujet complexe qui réclamerait des développements qui seraient ici hors cadres et ne sauraient peut-être pas en arbitrer les interprétations souvent contradictoires. Tout au plus nous suggérons un décryptage sommaire dénué de toutes les précautions d'usage.

Le premier défi posé aux nouveaux arrivants européens fut l'interface avec les populations autochtones. Après des efforts d'assimilation et de ségrégation qui échouent, des rapports positifs vont se développer entre les colonisateurs français et la population autochtone. Les échanges inter-culturels entre les deux groupes vont même engendrer un certain syncrétisme. Voilà qui est fort différent de l'expérience des Britanniques avec les populations autochtones (Paquet / Wallot 1987). Avec les francophones, c'est davantage une coexistence pacifique, alors qu'avec les Britanniques, c'est davantage une coexistence hostile.

Le second défi au plan ethno-culturel vient avec l'invasion britannique au 18^e siècle: il faut alors définir un interface entre la population francophone et les nouveaux arrivants. Du milieu du 18^e au milieu du 19^e siècle, deux versions des rapports inter-culturels ont cohabité au Canada: côté des colons britanniques, c'est clairement une tentative d'assimilation et d'acculturation à trois heures qu'on privilégie, qu'on veut imposer; côté des « nouveaux sujets britanniques » au Canada (les francophones locaux), c'est plutôt le modèle SUD qu'on privilégie comme solution de survie: on se replie dans des activités complémentaires à celles des nouveaux arrivants, on se crée des réseaux de commerce et une « spécialisation par identité » au sens de Ben-Porath (Denton 1966; Ben-Porath 1980). Le modèle SUD va prévaloir.

Dans l'espace québécois, le modèle SUD va s'accréditer: chaque groupe va en arriver à contrôler une partie du terrain des opérations. A Montréal, il va y avoir consolidation de la puissance anglophone et l'imposition de son dominium. C'est le modèle SUD *de facto*, un état de fait qui ne s'érodera que dans la seconde moitié du 20^e siècle. En province, c'est l'hégémonie des francophones, sauf dans quelques enclaves. Les francophones y construisent leurs

zones de sécurité porteuses d'entrepreneurship (Paquet 1986). Le grand poumon économique anglophone qu'est Montréal donne évidemment support aux groupes régionaux anglophones qui veulent faire alliance, mais ce sont surtout des influences nord-américaines qui s'y font place. Il s'agit là encore d'une version du modèle SUD.

Le troisième défi vient des vagues d'immigration au Québec en provenance de l'Europe, puis de l'Asie et du sud de l'Amérique plus tard. Ces groupes vont d'abord le plus souvent se greffer sur la population québécoise sans l'entamer. Coexistence plus ou moins pacifique des nouveaux arrivants qui vont se fixer surtout dans la région de Montréal et qui seront très inégalement et de moins en moins effectivement assimilés. Se développe progressivement donc une version SUD-OUEST des rapports inter-culturels. Avec les années 60-70, ces pressions diverses montent autour de la population francophone : il y a une conscience accrue de la part des francophones de leur infériorité économique au plan individuel et socio-matériel par rapport aux anglophones et découverte aussi, à l'occasion des rapports de la Commission royale sur le bilinguisme et le biculturalisme, que l'érosion de la place centrale du français et des francophones au Québec est plus grande qu'on ne l'aurait cru et que l'infériorité économique est plus profonde qu'on l'avait soupçonné. On va réagir par des investissements massifs—collectifs et symboliques—en B, C, D de façon à rebalancer l'équation.

Dans l'après-Seconde Guerre Mondiale, le Québec a été tenté pendant un court moment de jouer franc NORD : profiter de la croissance économique, laisser jouer une concurrence inter-ethnique tout juste trafiquée par une intervention étatique intelligente susceptible de conformer la nouvelle donne en faveur des francophones. C'est la stratégie qu'on sent se dessiner dans les années 50 et 60. La crise de la fin des années 60 et des années 70 a cependant modifié les enjeux. Les tendances méridionales refont surface mais, cette fois, avec le pari audacieux sur une certaine capacité d'acculturation par les francophones : direction SUD / SUD-EST.

On n'est plus certain à la fin des années 80 que ce pari puisse être gagné. La prolifération des quartiers ethniques à Montréal, le peu de pénétration de ces communautés dans les filières gouvernementales ou dans les grands réseaux d'affaires ont fait renaître une action plus franchement SUD / SUD-OUEST au Québec. Voilà qui a l'avantage de s'arrimer très bien avec la position du gouvernement fédéral en place depuis le milieu des années 1980. En effet, la politique de multiculturalisme dans le respect du bilinguisme du gouvernement Mulroney est franchement en direction SUD / SUD-OUEST—à huit heures—bien différente de celle du gouvernement Trudeau qui tout en s'orientant franc NORD voulait affirmer le bilinguisme au plan national : solution midi et demi.

Tout au long de la période la plus récente, le Québec a ré-écrit son contrat social : un contrat qui reconnaît des droits aux individus mais aussi aux groupes, aux langues et aux cultures. Cette approche a suscité des attaques violentes de la part de nombreux anglo-québécois mais aussi d'autres qui croient que droits

collectifs et libertés individuelles sont incompatibles. Les débats politiques de 1988-89 au Québec ont accentué les positions des divers partis, mais il est clair que, sans trop bien le dire, la position du Québec affirme la nécessité de cohabitation de droits individuels et de droits collectifs.

La logique qui sous-tend cette position n'a pas été explicitée aussi clairement qu'il aurait fallu. On peut cependant en suggérer une explicitation dans l'esprit de ce que suggère Serge-Christophe Kolm (Kolm 1985). Kolm rappelle que le libéralisme ne se réduit pas à l'individualisme, qu'il existe des droits infra et supra-individuels : « l'illégitimité . . . de contrats personnels à très long terme . . . l'est au nom d'un droit de la personne future que sera cet individu, à se défendre contre la personne présente qu'il est . . . D'autre part, il y a les droits bien habituels des « personnes morales » qui sont des associations, groupes, familles, entreprises, collectivités locales, nations, etc. » (Kolm 1985 : 264).

Parmi les entités supra-individuelles, il y a toute la gamme qui va des plus « individualistes »—les associations volontaires—jusqu'aux plus « organiques » que sont les communautés culturelles—collectivités interactionnelles avec leur « personnalité ». Kolm suggère que les droits des cultures et des groupes ne sont pas nécessairement réductibles aux droits de leurs membres, car cela ferait fi des relations entre ces membres :

les relations correspondantes sont souvent complexes, non-codifiées et variables, indirectes, inconnues *a priori* dotées de forts éléments de concernement collectif et « biens publics. » Elles sont fréquemment brouillées par des interactions interpersonnelles intenses et intimes, emmêlées par des sentiments interindividuels puissants, étouffées par le poids des normes sociales, dissoutes par les adhésions et dévouements au groupe des individus, tous faits qui effacent la signification des notions de préférences, choix et libertés individuels. En conséquence, il est souvent peu fructueux conceptuellement de ramener à tout prix ces droits d'entités sociales à des droits de leurs membres. (Kolm 1985 : 266).

De continuer Kolm, comme souvent la modernisation a entraîné des vagues d'uniformisation culturelle, et par là la mort de cultures humaines et de langues, il existe de bonnes raisons pour défendre la diversité du patrimoine culturel mondial—« requisite variety » à la Ashby—comme son bien le plus précieux, et ce même quand des individus divisés dans leur intérieur, prévoyant mal les conséquences à long terme, et accablés de pressions sociales, semblent choisir volontairement de les laisser disparaître :

Il y a donc certainement un essentiel droit des cultures à conserver certains de leurs traits, opposable le cas échéant à des droits d'individus. On doit considérer plus explicitement des droits des langues humaines à survivre. Puisqu'il est inhabituel (mais pas impossible) de considérer qu'une culture est douée de volonté, et que c'est encore plus vrai d'une langue, ces droits doivent s'entendre comme les *devoirs correspondants* [c'est nous qui soulignons], de les respecter ou faire respecter, qu'ils opposent aux autres

entités sociales. Leur manifestation se réalise par des protections, des soutiens ou subventions de maintiens de traits culturels, d'explications en leur faveur, de leur transmission par l'éducation (langues en particulier), de conservation de lieux, constructions, écrits, etc., qui leur sont essentiels, par le contrôle de certains contacts ou moyens de communication, en équilibre quand il y a lieu avec des droits d'individus à bénéficier d'avantages du modernisme. (Kolm 1985 : 268)

Kolm ne défend pas doctrinairement tous les traits culturels. La gravité humaine ou la barbarie de ces traits (crémation des veuves, excision, etc.) les rend parfois trop coûteux. Mais, pour Kolm, pas question cependant de combattre indirectement et aveuglément le droit à la différence et le bon usage de la diversité en occultant les avantages globaux qui en découlent (Geertz 1986).

C'est, semble-t-il, un discours implicite à peu près semblable qu'on tient au Québec ces temps-ci. On se refuse à abandonner l'interface ethno-culturel aux seules forces individualistes, ou à la concurrence entre groupes comme dans le modèle nord. On affirme certains droits de la culture, de la langue, de la différence. Mais aucun document clairement explicite n'existe pour le moment qui puisse guider les arbitrages entre les droits culturels et les droits d'individus. Force est donc de laisser une certaine « jurisprudence » se construire difficilement. Il se peut fort bien que ce ne soit pas la voie la plus heureuse.

CITOYENNETÉ RENOUVELÉE

En pratique, il ne suffit pas d'espérer qu'une notion syncrétique, progressive et initiative de citoyenneté vienne fédérer les identités multiples et partielles qui définissent la société multi-ethnique pour que celle-ci se réalise. Là, plus qu'ailleurs peut-être, les règles, conventions et normes doivent être activement développées, même si c'est avec beaucoup de précaution, si l'on espère un progrès sans heurts. En effet, l'« état d'esprit approprié » ne coule pas nécessairement des seuls jeux de la société civile, en particulier quand les droits collectifs sont pris en compte. Il faut donc suggérer des voies de construction de cette notion de citoyenneté qui saurait faire les arbitrages qui s'imposent.

Les sociétés démocratiques n'ont pas une expérience heureuse de ce genre de développement. La société civile démocratique a surtout engendré des entités supra-individuelles à caractère « individualiste », plus aisément réductibles à leurs composantes. En conséquence, les droits culturels, par exemple, et les devoirs correspondants pour les autres cultures, n'ont pas été développés ou l'ont été assez maladroitement sans le plus souvent recevoir le soubassement de règles et de conventions qui tendraient à les affirmer, à les maintenir et à les opérationnaliser et à les renforcer quand c'est utile.

Il faut donc trouver des moyens de contrebalancer ce que certains considèrent comme une hypertélie des droits individuels (via les chartes des droits et libertés) par des normes et conventions qui donneraient une valence plus grande aux dimensions culturelles et linguistiques (dont on dit qu'elles ont valeur de

biens publics et de patrimoine important) par une explicitation des *devoirs* qui y *correspondent* pour les individus. Cet équilibre des droits individuels et des droits collectifs a pour but de protéger certaines valeurs culturelles ou sociales propres et relève de l'« instinct de survie », écrit Henri Brun dans le cas du Québec (Brun 1989). Reste à savoir comment on peut ancrer cet équilibre dans des fondements qui ne soient ni arbitraires, ni meubles, ni trop contraignants.

Une redéfinition de la citoyenneté permettant de bien préciser les droits et obligations des citoyens pourrait être la solution. Une telle définition pourrait donner des fondements aux décisions politiques comme celles qui ont déchiré le Québec récemment. En fait, les difficultés qu'on a eues découlent largement du fait que les chartes existantes sont bancales et déficientes : les chartes canadienne ou québécoise des droits et libertés sont riches au plan des droits des citoyens en tant qu'individus mais sont presque muettes sur les obligations imposées aux citoyens au nom des droits collectifs. Qui plus est, l'asymétrie est rendue encore plus grave quand on se rend compte que la Cour suprême a décidé d'interpréter ces chartes de telle manière qu'en fait, « elle exige des gouvernements la preuve que les lois et règlements qui affectent les droits individuels sont *nécessaires* et non pas seulement *raisonnables* » (Brun 1989). C'est imposer un *dominium* des droits individuels.

Le problème de la définition des obligations du citoyen n'est pas facile, mais ce n'est pas une tâche impossible. Trop d'analystes se contentent d'admettre qu'il y a un problème sans chercher une solution à cause de l'odieux qu'il y a à déclarer que l'optimum de coercition n'est peut-être pas zéro : même si on peut arriver à admettre cette idée au niveau des principes généraux, cela devient intolérable pour plusieurs dès qu'il faut définir au-delà de quelle borne les droits individuels doivent être sacrifiés. C'est ainsi que Dahrendorf diagnostique le problème éminemment bien (Dahrendorf 1988) mais refuse catégoriquement d'explorer des sentiers comme ceux défrichés par Lawrence Mead qui, dans son analyse de la politique sociale, n'hésite pas à parler de l'obligation de travailler comme le pendant des droits sociaux aux prestations d'aide sociale (Mead 1986).

Une problématique droits / obligations est jouable : le Code de droit canonique a su définir clairement les droits et obligations des fidèles. Il n'est pas impensable donc qu'on puisse définir en parallèle les droits et obligations des citoyens tant aux plans civil, social, politique qu'économique. Les obligations renvoient évidemment dans ce cas-là à une notion normative de l'État à qui on reconnaît le devoir de maintenir la paix, d'assurer la stabilité et la prospérité, d'assumer des fonctions d'adjudication et de pilotage (Kelly 1979), mais aussi certaines responsabilités au plan culturel (Kolm 1985).

Un tel ensemble de droits / responsabilités va tendre à définir une sorte de *persona* socio et ethno-culturelle en continuel devenir : dans un univers où l'État ne saurait ou ne voudrait plus fondre les ethnicités, les canons de la citoyenneté vont permettre de gérer les rapports ethno-culturels et servir de base

pour arbitrer certains choix. Ces nouveaux fondements sont nécessaires dans le monde moderne : en glissant de l'Ancien régime vers le Nouveau, on est passé d'un monde de *sujets* (où chacun avait surtout des obligations envers le seigneur ou le suzerain, et où on sentait surtout le besoin de prescrire certains droits pour limiter les abus du Prince), à un monde de *citoyens* (qui en sont venus à développer une multitude de droits sans accepter aisément des devoirs et pour qui le concept même d'obligation s'est tellement atrophié qu'il arrive même qu'il soit perçu comme dangereux).

Des parallèles peuvent pourtant être tirés entre droits et obligations. Pour fixer les idées—suivant la suggestion de T.H. Marshall dans son essai célèbre—on peut classer les droits du citoyen en trois groupes : droits civils, droits politiques et droits sociaux (Marshall 1965). Dans un contrat social libéral renouvelé, à chacune de ces familles de droits pourraient correspondre certaines obligations : obligations civiles, politiques et sociales.

Aux droits civils qui reconnaissent une certaine égalité d'opportunités et des libertés de choix, correspondraient l'obligation de travailler à la mise en place des « ligatures », i.e., des coordonnées qui donnent leur sens à ces choix, des réseaux locaux, familiaux et culturels qui les fondent (Dahrendorf 1988), et l'obligation de participer activement aux associations volontaires qui forment la société civile. Aux droits politiques correspondraient des obligations politiques : non seulement celles de payer ses impôts mais de comprendre la nature et l'incidence du régime fiscal, non seulement celle de faire son service militaire mais de s'instruire pour pouvoir prendre part aux débats nationaux sur les questions d'importance (Janowitz 1980). Aux droits sociaux correspondraient des obligations sociales : le devoir de promouvoir le mieux-être de la communauté, de faire bon usage de l'« imagination sociologique » (Marshall 1965).

Sans ce rééquilibrage, c'est le monde du « passager clandestin », i.e., des citoyens qui encaissent droits et privilèges sans en accepter d'en payer le prix en termes d'obligations. Il ne peut s'ensuivre qu'une société du litige paralysée par la zizanie. La société civile peut évidemment jusqu'à un certain point distiller des solutions, mais pas question de compter seulement sur la société civile pour construire ce sens des obligations, il faut aussi une action délibérée de l'État pour mettre en place les « ligatures » nécessaires et construire le capital social. D'ailleurs l'État lui-même a un besoin urgent d'une telle charte des obligations et ne peut attendre qu'elle se mette en place d'elle-même : des arbitrages entre droits collectifs et droits individuels s'imposent déjà en matière ethno-culturelle et sans une charte des droits et obligations—une notion renouvelée de citoyenneté—qui lui serve de sextant, l'État n'est pas en mesure de faire raisonnablement et légitimement ces arbitrages i.e. de faire son travail.

On peut très certainement à partir des suggestions d'obligations esquissées par Marshall et Janowitz développer un projet de charte des obligations des citoyens, mais une simple déclaration ne va pas suffire. Régénérer la citoyenneté appelle des actions directes susceptibles de réduire l'apathie des citoyens [décentralisation, administration indirecte, prime à l'innovation sociale, etc.]

(Nisbet 1974). Pas possible autrement d'assurer le processus de mise en place de protections pour certains droits collectifs qui ne peuvent s'accréditer que via la reconnaissance de devoirs correspondants, à respecter et à faire respecter.

Dans le cas du Québec, les notions implicites qui se sont accréditées des obligations civiles, politiques et sociales donnent beaucoup de place à la langue et à l'ethno-culturel. Dans une situation de précarité culturelle et de « souveraineté perforée » (Duchacek 1986), l'État a déclaré devoir s'assurer que les droits collectifs vont être maintenus. Afin que ce genre d'action ne donne pas dans l'arbitraire et qu'il s'inscrive dans un contexte toujours mouvant mais stable aussi—autant que possible en tout cas—, il faut qu'il s'enracine dans une déclaration des obligations des citoyens.

Quant à savoir si, au Québec, on devrait mettre en force une charte des obligations différente de celle qui pourrait être mise en place au Canada, voilà qui a attiré certain. Si le Québec est une société distincte et si les obligations et les droits culturels doivent être partie intégrante d'un contrat social libéral, il est normal que ce soit le cas.

L'explicitation et la construction d'une telle charte repose sur un processus qui ne sera pas moins pénible que celui qui a été nécessaire pour en arriver à une charte des droits et libertés. Il y aura toujours des gens pour dénoncer toute obligation comme coercition inacceptable, et toujours des factions que ne satisfera aucun compromis. Il reste que cette portion manquante du contrat social n'est pas impossible à définir.

Lancer un tel processus au Québec va entraîner un défi de taille : on devra préciser ce que l'on veut dire par société distincte : une société démocratique n'accepte pas de donner un chèque en blanc à ses gouvernements, pas plus dans ce registre que dans les autres. De même que toutes les libertés et tous les droits ne sont pas garantis par la charte des droits, mais seulement ceux sur lesquels on s'est mis d'accord, de même il serait déraisonnable de vouloir garder à la clause « nonobstant » ou à la clause « société distincte » le caractère universel et arbitraire qu'elles semblent avoir pour le moment. Il faut donner contenu à cette qualité de « société distincte » et le traduire dans un énoncé des obligations imposées aux citoyens du Québec pour assurer le maintien de ce caractère distinct. Voilà qui va limiter la généralité de ces clauses et leur usage à la défense de ces éléments fondamentaux de distinction. Une telle clarification, non point pour en fossiliser le contenu mais pour marquer clairement la position de départ dans ce qu'il faut anticiper comme une évolution lente, contribuerait à rassurer ceux qui y voient un instrument contondant illégitime.

Il ne serait pas utile d'expliciter ici une version toute personnelle de ce que devraient être les éléments de cette charte des obligations. En fait, il faudra éviter qu'un tel document soit parachuté sur la population : il faut que les citoyens le construisent. Des États généraux ayant pour but de déclencher le processus de construction d'une telle charte pourraient être réunis dès 1990 autour d'un projet préliminaire. Même s'il est peu probable que l'on puisse concrétiser un texte final en quelques mois, le débat ainsi lancé pourrait s'avérer

utile comme mécanisme d'« apprentissage social » « social learning » et contribuer à accélérer le processus de renouvellement de la notion de citoyenneté que nous appelons (Friedmann 1987).

CONCLUSION

L'acrimonie qui va accompagner un tel processus de consultation nationale ne surprendra que ceux qui n'ont pas compris le caractère fondamental de la notion de citoyenneté. On verra se confronter dans ce genre de débat deux visions contradictoires de la notion de citoyenneté qui correspondent en tous points aux deux conceptions d'ethnicité et de culture dont nous avons parlé plus haut : l'une essentialiste, dont le sens est que la citoyenneté est héritée à la naissance et qu'elle n'est donc pas négociable ; l'autre optionaliste pour qui la citoyenneté est acquise par consentement (Schuck / Smith 1985).

Notre pari sur l'approche optionaliste et consensualiste a le mérite d'ouvrir à une grande flexibilité et d'être empreinte de tolérance : elle laisse place à ceux qui sont prêts à sacrifier certains droits pour ne pas avoir à se soumettre à certaines obligations. Ainsi, il est pensable que certains puissent choisir de renoncer à la citoyenneté sans quitter le pays. Si le droit de se joindre au groupe sous certaines conditions existe, le droit de renoncer à cette citoyenneté doit aussi exister. Ceux qui choisiraient cette voie pourraient devenir des résidents permanents soumis à certaines contraintes imposées à tous mais privés de certains droits et libérés de certaines obligations à déterminer.

Une telle ouverture symbolique du Québec, conjuguée à une clarification des obligations des citoyens, permettrait d'appliquer les nouvelles règles du jeu à toute la population et non seulement aux nouveaux arrivants. Il s'agirait simplement de négocier les obligations dans un esprit tel que les « expatriations » (effectives et symboliques) ne soient pas trop importantes.

Le Canada, à mesure que sa politique d'ouverture sur le monde va engendrer une mosaïque ethno-culturelle éclatée, va sentir aussi le besoin de négocier une telle charte des obligations. Faute de le faire, le tissu social distendu pourra engendrer des tensions socio-ethniques regrettables. En ce sens, la gestion des rapports ethno-culturels au Québec pourrait bien avoir servi de laboratoire pour la mise en place de stratégies adoptables par toutes les sociétés multi-ethniques modernes.

En effet, ce que révèle l'expérience québécoise, c'est que la logique des droits poussée à sa limite (Dahrendorf 1974) et l'idéologie de l'égalitarisme factice que cette tendance soutient (Dupuy 1985) conduisent à une sorte d'indifférenciation qui, loin de réaliser les libertés et l'égalité qu'on cherchait, conduit plutôt à son contraire, i.e., qu'elle produit des inégalités et une certaine reféodalisation de mauvais aloi. Il s'avère donc nécessaire de contraindre cette logique des droits par une logique des obligations, même si cela doit vouloir dire la mise en place de certaines hiérarchies. Certains se rebiffent automatiquement contre toute hiérarchisation : ceux qui sont obnubilés par l'idéologie

égalitariste. Mais cette réaction n'émane que de ceux qui n'ont pas compris les dangers de la « perversion par la perfection » dans cette voie (Dahrendorf 1974), et les « dégâts moraux » qu'une quête aveugle et butée d'égalité peut entraîner.

Certains pourront voir dans ce recours à « la thèse des effets pervers » un usage inconsidéré de la rhétorique conservatrice pour remettre en question la logique des droits qu'on célèbre comme porteuse de progrès civil, politique et socio-économique (Hirschman 1989) : la logique des droits est presque sacrée en cette année de célébration du bicentenaire de la Révolution française et de la Déclaration des droits et libertés ! Une telle accusation serait en porte-à-faux. Il se peut que la rhétorique conservatrice ait abusé de la thèse des effets pervers, mais cela ne saurait cacher que, dans le cas qui nous occupe, ces effets ont été particulièrement pernicieux.

En fait, l'idée d'une notion renouvelée de citoyenneté qui balance droits et obligations constitue une sorte de voie mitoyenne entre deux sentiers dangereux : (1) celui que conseillent les conservateurs avec leur thèse pessimiste des effets pervers (les politiques n'engendrent que le contraire de ce qu'elles disent vouloir poursuivre) et qui amènerait à un rejet pur et net du gambit sur les droits et (2) celui que suggèrent les réformateurs zélés forts du « principe de la main camouflante » (un mécanisme qui engage des populations qui détestent les risques à en prendre trop, ou tout au moins plus qu'elles ne le désireraient, en occultant les difficultés et les problèmes auxquels une réforme va donner lieu) et qui amènerait à une soumission aveugle au gambit exclusif sur les droits parce qu'on cache les coûts réels de l'opération (Hirschman 1967).

C'est pour avoir compris intuitivement le danger de ces deux travers et la nécessité de trouver une voie mitoyenne qui les évite tous deux que le mode de gestion des rapports ethno-culturels en train de prendre au Québec peut avoir valeur exemplaire. Une nouvelle notion de citoyenneté rendrait simplement transparent et légitime ce qui est en train de s'accomplir.

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Les anglophones au Québec et les droits linguistiques[†]

INTRODUCTION

LA DISPUTE LINGUISTIQUE au Québec et au Canada est le résultat de l'histoire et des différences de nos peuples sur le plan social, culturel et linguistique, mais le débat public se trouve essentiellement sur le plan légal. Mon but est de faire un tour d'horizon de certaines de nos lois et de nos droits linguistiques (il y a une différence entre lois et droits) et en conclusion de présenter quelques suggestions en tant qu'anglophone au Québec.

LE CANADA—UN ÉTAT FÉDÉRAL—NON UNITAIRE

Le gouvernement fédéral et les provinces

Toute analyse du sujet doit commencer par une reconnaissance de la nature fédérale du Canada. Comme nous le savons, les pouvoirs législatifs sont divisés entre le parlement fédéral et les parlements provinciaux. Cette séparation se lit principalement aux articles 91 et 92 de l'Acte de l'Amérique du Nord britannique, 1867, (maintenant la *Loi constitutionnelle de 1867*). Il convient de noter que ni la langue ni la culture ne sont mentionnées dans cette division des pouvoirs. En effet, la *Loi constitutionnelle de 1867* ne contient qu'une provision en matière de langue—l'article 133. Cet article stipule que les langues française et anglaise peuvent être utilisées dans les parlements et les tribunaux

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du Québec et du Canada et que les deux langues *doivent* être utilisées dans les archives, procès-verbaux et journaux de ces parlements, (à cet égard voir *Québec (P.G.) c. Blaikie*, (1979) 101 D.L.R.(3d) 394).

La langue—matière accessoire

La langue n'est pas une matière législative indépendante. Elle est « accessoire » à l'exercice de la compétence relative à une catégorie de sujets attribuée au parlement fédéral ou aux parlements provinciaux.

Ainsi, le champ est de pouvoirs coexistants. Le parlement fédéral peut légiférer en matière de langue comme « accessoire » à un autre sujet qui lui est assigné par la *Loi constitutionnelle de 1867*, par exemple, article 91.2—« La réglementation du trafic et du commerce » ; article 91.27—« La loi criminelle . . . » ; etc., tandis que les parlements provinciaux peuvent légiférer en matière de langue comme « accessoire » à certains sujets dont ils ont compétence exclusive en vertu de la *Loi constitutionnelle de 1867*, par exemple, article 92.13—« La propriété et les droits civils dans la province » ; article 92.16 « Généralement toutes les matières d'une nature purement locale ou privée dans la province. »

Législation linguistique

En dépit de l'avertissement de Maurice Duplessis qui avait déclaré que les gouvernements ne devraient jamais légiférer en matière de langue, le parlement fédéral et les parlements provinciaux ont récemment agi ainsi. Aujourd'hui les droits linguistiques sont protégés par des instruments constitutionnels et d'autres instruments législatifs, e.g., *Loi sur les langues officielles*, 1988, c.38. En matière de lois constitutionnelles la plus importante est la *Charte canadienne des droits et libertés*. La nature de cette charte à l'égard des droits linguistiques fut illustrée par la Cour suprême dans les affaires *Ford et Devine*, [1988] 2 R.C.S. 712 et 790.

LA CHARTE CANADIENNE—DROITS INDIVIDUELS ET COLLECTIFS

Il y a plus de six mois que la Cour suprême du Canada rendit ses décisions dans les affaires *Ford et Devine*, [1988] 2 R.C.S. 712 et 790. Dans ces arrêts, la Cour suprême décida que les provisions de la *Charte de la langue française* (la loi 101, L.R.Q. 1977, c. C-11) exigeant l'usage unique de la langue française en matière d'affichage commercial, violaient les articles 3 et 10 de la *Charte des droits et libertés de la personne*, L.R.Q. 1977, c. C-12.

3 « Toute personne est titulaire des libertés fondamentales telles la . . . liberté d'expression . . . »

10 « Toute personne a droit à la reconnaissance et à l'exercice, en pleine égalité, des droits et libertés de la personne, sans distinction, exclusion ou préférence fondée sur . . . la langue . . . »

De plus, les dites provisions de la loi 101 violaient l'article 2(b) de la *Charte canadienne des droits et libertés* ; partie I de la *Loi constitutionnelle de 1982*, constituant l'annex B de la *Loi de 1982 sur le Canada* (R.-U.), 1982, c.11 :

2(b) « Chacun a les libertés fondamentales suivantes :] libertés . . . d'expression. »

La Cour suprême note que la liberté d'expression, garantie par l'article 3 de la *Charte québécoise* et l'article 2(b) de la *Charte canadienne*, sont similaires et inclut la liberté de s'exprimer dans la langue de son choix. (Voir [1988] 2 R.C.S. 712 à la p. 748.)

Ce qui a été dit par rapport à la charte canadienne démontre son double rôle : La *Charte canadienne des droits et libertés* est destinée à protéger les droits individuels et les droits collectifs. En matière des droits collectifs, nous remarquons deux articles : En premier lieu, l'article 33 (la clause « nonobstant ») et en deuxième lieu l'article 1 (la « société libre et démocratique »). D'autres articles de la *Charte* mentionnent indirectement des droits collectifs — par exemple, les articles 6 (4) et 15 (2) (programmes de promotion sociale) et l'article 25 (droits et libertés des autochtones). Le reste de la charte vise la protection des droits et libertés individuels.

LA CLAUSE « NONOBTANT »

La clause dérogatoire se trouve à l'article 33 de la *Charte*. Elle permet au parlement fédéral ou à une législature provinciale de déclarer qu'une loi « a effet indépendamment d'une disposition donnée de l'article 2 ou des articles 7 à 15 » de la *Charte*. En matière des clauses « nonobstant », on note que plusieurs instruments législatifs contiennent des provisions similaires—par exemple, l'article 52 de la *Charte des droits et libertés de la personne* du Québec décrète :

Art. 52. « Aucune disposition d'une loi, même postérieure à la *Charte*, ne peut déroger aux articles 1 à 38, sauf dans la mesure prévue par ces articles, à moins que cette loi n'énonce expressément que cette disposition s'applique malgré la *Charte*. »

Voir aussi : La *Déclaration canadienne des droits*, 1960, L.R.C. 1985, app. III.

Art. 2. « Toute loi du Canada, à moins qu'une loi du Parlement du Canada ne déclare expressément qu'elle s'appliquera nonobstant la *Déclaration canadienne des droits* doit s'interpréter et s'appliquer de manière à ne pas supprimer, restreindre ou enfreindre l'un quelconque des droits ou des libertés reconnus et déclarés aux présentes. . . . »

The Alberta Bill of Rights, R.S.A. 1980 c. A-16, S.A. 1972, c.1.

Art 2. "Every law of Alberta shall unless it is expressly declared by an Act of the Legislature that it operates notwithstanding *The Alberta Bill of Rights*, be so construed

and applied as not to abrogate . . . any of the rights and freedoms herein recognized and declared."

Saskatchewan Human Rights Code, S.S. 1979, c.24.1.

Art. 44. "Every law of Saskatchewan is inoperative to the extent that it authorizes or requires the doing of anything prohibited by this Act unless . . . it is expressly declared by an Act of the Legislature to operate notwithstanding this Act."

Code des droits de la personne, 1981, L.O. 1981, c.53 (de l'Ontario)

Art. 46(2). « Lorsqu'une disposition d'une loi ou d'un règlement prétend exiger ou autoriser une forme de conduite qui constitue une infraction à la première partie, la présente loi s'applique et prévaut, à moins que la loi ou le règlement visé ne précise expressément qu'il s'applique malgré la présente loi. »

En effet, le *Code des droits de la personne* du Manitoba, L.M. 1987-88, c.45 qui vise la protection des citoyens contre la discrimination dans le domaine public, dit dans son préambule : « la protection des droits de la personne au Manitoba est d'une importance telle qu'elle devrait primer sur les autres lois de la province. » Néanmoins, cette loi contient une clause « nonobstant : »

Art. 58. « Sauf disposition contraire prévue expressément dans le présent code ou dans toute autre loi de la Législature, les droits et obligations fondamentaux du présent code priment sur ceux de toute autre loi de la Législature, que cette loi soit édictée avant ou après celui-ci. »

Ces exemples démontrent que les clauses dérogatoires font partie de la tradition constitutionnelle canadienne.

ARTICLE 1—SOCIÉTÉ LIBRE ET DÉMOCRATIQUE

L'article premier de la *Charte* canadienne décrète que n'importe quel droit qui s'y trouve peut être restreint si cette limite est « raisonnable et dont la justification puisse se démontrer dans le cadre d'une société libre et démocratique ».

A QUI LA DÉCISION ?

La décision par rapport à la clause « nonobstant » est dans les mains du parlement fédéral ou d'une législature provinciale. Lui seul peut décider quand et comment cette clause sera employée—ainsi décida le premier ministre Bourassa en matière de projet de loi 178—la nouvelle loi sur l'affichage commercial.

Quant à l'article 1 de la *Charte*, il appartient aux tribunaux de décider si une limite imposée par une certaine loi sur un certain droit (en faveur de la collectivité) est « raisonnable » après que cette loi a été adoptée. La charte des droits du Québec contient une clause similaire :

Art. 9.1. « Les libertés et droits fondamentaux s'exercent dans le respect des valeurs démocratiques, de l'ordre public et du bien-être général des citoyens du Québec. [...] »

FORD ET DEVINE—LES CONSÉQUENCES

Dans les deux jugements *Ford* et *Devine*, la Cour suprême décida qu'une justification collective qui aurait permis l'exigence de l'usage unique de la langue française en matière d'affichage commercial n'avait pas été démontrée ni sous l'article 1 de la charte canadienne ni sous l'article 9.1 de la charte québécoise. Ce qui a été dit par rapport à la charte canadienne, néanmoins, était *obiter dictum* parce que la loi 101 contenait une disposition dérogatoire « valide et en vigueur adoptée conformément à l'article 33 de la *Charte* canadienne, » *Devine c. Québec (P.G.)*, [1988] 2 R.C.S. 790 à la p. 812. Ceci rendait cette charte sans effet.

A cet égard, la Cour note que l'emploi de la clause « nonobstant » est valable au moins comme technique législative. Ceci fut ignoré par les journaux et la plupart des commentateurs.

Il est ironique que la *Charte québécoise* ait rendu inopérantes les provisions en matière d'affichage commercial de la *Charte de la langue française*. La loi 101 contenait la clause « nonobstant » de la *Charte québécoise* (l'art. 52), mais elle était périmée depuis le 23 juin 1987 et n'avait pas été renouvelée par l'Assemblée nationale.

SOLUTIONS POLITIQUES

Les décisions du 15 décembre 1988 sont remarquables non seulement à cause du temps consacré à l'article 2(b) de la *Charte canadienne* qui, de toute manière, ne s'appliquait pas à la loi 101, mais aussi parce que la Cour suprême offrit des solutions politiques. La Cour suggéra qu'il serait digne d'une société « libre et démocratique » qui a droit de préserver son « visage linguistique » d'exiger « que le français accompagne toute autre langue ou l'on pourrait exiger qu'il soit plus en évidence que d'autres langues. » *Ford c. Québec (P.G.)*, [1988] 2 R.C.S. 712 à la p. 780.

Les solutions proposées par la Cour ne sont que deux de plusieurs qu'elle aurait pu offrir. Par exemple,

- a) l'affichage intérieur / extérieur ou des variations de ceci incluant des affiches de différentes dimensions ou des exigences diverses pour différents fonds de commerce ;

- b) distinction fondée sur régions géographiques ;
- c) exceptions pour petites entreprises—5, 10, 20, employés ;
- d) exceptions pour les entreprises internationales ; les entreprises interprovinciales ; les entreprises locales, etc.
- e) plus d'exceptions à la loi 101 (au-delà de celles qui existent présentement), e.g. pour la santé, la sécurité, etc.

A présent, la Cour suprême du Canada n'a ni l'autorité ni la compétence d'agir comme le conseil constitutionnel français. A mon avis, la Cour suprême doit faire très attention en offrant des solutions politiques. Les solutions qu'elle avait offertes ont été interprétées comme les *seules* solutions, bien que ni ces solutions ni d'autres alternatives politiques n'eussent été réellement discutées auparavant. (voir *Ford* aux pp. 778–80). Si la Cour continue d'agir ainsi, cela constituera un avis envers les parties plaidantes—dès à présent elles plaideront sur le plan politique et non pas légal. A mon avis, il n'est ni acceptable ni approprié pour une Cour canadienne d'offrir des solutions politiques. Ceci est déroutant et constitue un précédent dangereux. (Puis-je suggérer que la Cour a ses raisons que la raison ne connaît pas. L'équivalent en anglais est peut-être : « To err is human, to be applauded for it, divine. »)

PROJET DE LOI 178—LOI MODIFIANT LA CHARTE DE LA LANGUE FRANÇAISE

Les décisions de la Cour suprême forcèrent le premier ministre Bourassa à prendre une décision. Il a rejeté les solutions de la Cour et a adopté la solution de Léon Dion—l'affichage commercial extérieur restera uniquement français, tandis que l'affichage intérieur peut être bilingue.

La solution que le premier ministre Bourassa adopta n'était ni aussi généreuse aux anglophones que les solutions de la Cour ni aussi généreuse aux francophones que la *Charte de la langue française*. Néanmoins, chaque côté en a tiré un avantage. En vue d'éviter un retour aux tribunaux, le premier ministre Bourassa choisit d'invoquer la clause « nonobstant » dans le projet de loi 178. Le compromis intérieur / extérieur, ainsi que la décision d'invoquer la clause dérogatoire, mettaient M. Bourassa entre les deux camps où il a été sévèrement critiqué ; ceci nous ramène aux années '70 au moment où M. Bourassa fut critiqué à l'égard du projet de loi 22.

LA CLAUSE « NONOBTANT »

La clause « nonobstant » (l'art. 33) fut opposée par un grand nombre de Canadiens mais, nous devons l'avouer, elle représente la mosaïque canadienne—un territoire vaste composé de dix provinces avec des sociétés, des cultures et des coutumes diverses. A cet égard on note que la clause « nonobstant » fut invoquée par le parlement de la Saskatchewan en matière de législa-

tion retour-au-travail, de plus; c'est à l'insistance des provinces de l'Ouest qu'elle existe. Le Québec n'en était même pas aux négociations finales de la Charte (étant endormi dans une chambre d'hôtel à Hull, QC) alors que seulement l'Ontario et le Nouveau-Brunswick auraient accepté une charte sans la clause dérogatoire.

A mon avis, la clause «nonobstant» sera invoquée par la plupart des provinces, ainsi que par le parlement fédéral en matière de législation retour-au-travail (e.g. les hôpitaux, les écoles, etc.), à l'égard des ceintures de sécurité, de l'avortement, etc. En effet, la clause dérogatoire a déjà été invoquée à plusieurs reprises par le parlement du Québec. Voir, par exemple, la *Loi sur le ministre de l'éducation*, L.R.Q. c. M-15, arts. 17-18; la *Loi sur le régime de retraite de certains enseignants*, L.Q. 1986, c. 44, art. 62; la *Loi sur le conseil supérieur de l'éducation*, L.R.Q. c. C-60, arts. 31-32; la *Loi modifiant la loi favorisant la mise en valeur des exploitations agricoles* L.Q. 1986, c. 54, art. 16.

J'admets que l'existence d'une clause dérogatoire dans un document constitutionnel ne me plaît pas. Néanmoins, la nature fédérale du Canada, ainsi que la diversité de nos peuples, forcent son existence en tant que compromis constitutionnel. Une charte de droits avec une clause «nonobstant» vaut mieux qu'aucune charte du tout. En effet, la Charte a apporté de grands changements à la communauté juridique et ainsi à la société canadienne.

L'AFFICHAGE EXTÉRIEUR ET LES DROITS COLLECTIFS

Puis-je suggérer que les Québécois d'expression anglaise réexaminent la *Charte canadienne des droits et libertés* et, de plus, les droits collectifs de la majorité française au Québec, ainsi que les droits collectifs de la minorité anglaise au Québec?

Chaque Québécois doit se demander: «Comment allons-nous préserver nos deux cultures mondiales?» Il est évident que le français est en danger au Québec; quiconque en doute n'a qu'à se tourner vers les sociétés d'expression française du Maine, du Vermont, du New Hampshire et de la Louisiane; la disparition de celles-ci constitue un avertissement pour nous tous.

SYMBOLISME C. SUBSTANCE

A mon avis, l'affichage commercial extérieur est, en grande partie, symbolique et en matière symbolique la majorité peut agir comme elle le désire. De plus, tous les Québécois profitent du visage français du Québec, par exemple, en matière de tourisme. Néanmoins, ce droit ne devrait pas être pris et conduire à des extrêmes absurdes. La prohibition du mot «STOP» sur les arrêts de circulation au Québec est un tel extrême. Même la France reconnaît le mot «STOP» en tant que bon français.

Nous notons aussi que les Québécois d'expression anglaise sont protégés par

la loi 101 et ses exceptions en matière de santé, de sécurité, etc. En effet, le préambule de la *Charte de la langue française* dit :

l'assemblée nationale entend poursuivre cet objectif dans un esprit de justice et d'ouverture, dans le respect des institutions de la communauté québécoise d'expression anglaise et celui des minorités ethniques, dont elle reconnaît l'apport précieux au développement du Québec.

LE TARIF CACHÉ

Le fait français au Québec offre à tous les Québécois—francophones et anglophones—un avantage d'une valeur inestimable. Au-delà des avantages culturels, etc., il existe aussi un avantage économique qui peut vous intriguer, et que j'appelle « le tarif caché. » Le fait français au Québec force ceux qui ont l'intention de s'établir au Québec à réfléchir avant de s'installer ; ils doivent reconnaître qu'ils devront tenir compte de la langue française.

Par exemple, depuis le 1er janvier 1989 (date de l'entrée en vigueur de l'accord libre-échange) des firmes d'avocats de New York se sont établies à Toronto et à Vancouver. De plus, la Cour suprême (dans l'affaire *Andrews c. Law Society of British Columbia*, [1989] 1 R.C.S. 143) décida qu'il n'était pas nécessaire d'être citoyen canadien pour se joindre à la « B.C. Law Society ». Cependant, pour s'établir et exploiter au Québec, les avocats, les agents de change, les professionnels, en fait, toute entreprise au Québec doit être capable de fonctionner en français. Ainsi, nous, au Québec, pouvons faire concurrence aux États-Unis, mais, pour les Américains, il y a un tarif caché qui les empêche de venir s'établir chez nous. Dans une situation similaire, un tel tarif s'est révélé fort avantageux pour les Japonais. Ils envahissent le secteur économique des États-Unis mais il est considérablement plus difficile pour les Américains d'en faire autant au Japon.

A cet égard on remarque que les entreprises Péladeau, Lévesque, Bombardier, et Desmarais, ainsi que plusieurs entreprises anglophones, ont pénétré le marché américain. En même temps, tous les Québécois—francophones et anglophones—sont protégés, par le tarif caché, d'une invasion américaine.

MATIÈRES PLUS IMPORTANTES

Le débat actuel en matière de droits linguistiques dérobe à nos esprits trop d'énergie et de vigueur. Il existe des matières d'importance fort plus considérable auxquelles nous devons consacrer plus de temps et d'énergie. Par exemple, l'excellence au travail, l'excellence dans les écoles, les cégeps et les universités, ainsi que les problèmes sociaux qui proviennent de la consommation de drogues, l'environnement, la pauvreté et la violence. Ces problèmes exigent un effort commun de tous les membres de la société québécoise ; ensemble nous pourrions les résoudre ; divisés, nous sommes condamnés à échouer.

CONCLUSION

Le moment est arrivé pour les Québécois d'expression anglaise d'apprécier les droits collectifs qui existent dans la *Charte canadienne de droits et libertés* et de se joindre à la majorité québécoise en vue de protéger et de participer à l'expression de la langue et de la culture françaises. Cette union ne peut qu'anoblir et profiter à tous les Québécois. De plus, pour assurer un futur harmonieux au Québec et au Canada, les Québécois, de part et d'autre, doivent se séparer des éléments radicaux.

La générosité est la clef

La générosité est la solution à tous nos problèmes. Dans son adresse inaugurale (le 19 janvier 1989), le président américain, George Bush, déclarait : « En matières cruciales—unité ; en matières importantes—diversité ; en toutes matières—générosité. »

A mon avis, nous pourrions jouir de la diversité et de l'unité au Canada et au Québec. La générosité, de part et d'autre, est la clef qui nous permettrait d'atteindre ce but.

Passion, s'il y a lieu, ainsi que la générosité et la grandeur

Au 19^{ème} siècle, Stendhal écrivit : "The tragedy of modern life is not that people need or lack luxury, but that they have so little passion, so little generosity, so little seeking for the spirit of grandeur."

La reconnaissance mutuelle

Les Québécois d'expression anglaise doivent reconnaître que les francophones sont sincèrement soucieux de préserver leur langue et leur culture.

Puis-je ajouter ceci, à mon avis, depuis une dizaine d'années, la langue française se trouve plus forte et plus vivante au Québec et au Canada. Reste à prévoir l'avenir de la langue française en Amérique du Nord.

Pour leur part, les Québécois d'expression française doivent reconnaître les grandes mesures prises par les anglophones depuis une dizaine d'années, par exemple, en apprenant le français et en s'ajustant à la vie et à la culture française. De plus, les Québécois francophones doivent comprendre la crainte des anglophones ; ils ont contribué à la société québécoise et ils ont fait des efforts pour s'intégrer, mais néanmoins ils voient leur base et leur population diminuer.

Le Rôle des anglophones au Québec

Minoritaires au Québec mais majoritaires au Canada et en Amérique du Nord, les anglophones du Québec sont doublement bénis. Ils jouissent de leur langue et de leur culture sans peur de les perdre et en même temps ils habitent le Québec, le seul endroit en Amérique du Nord où l'on peut bénéficier de deux grandes langues et cultures mondiales.

À mon avis, les anglophones du Québec devraient accepter à bras ouverts l'avantage que le destin leur a conféré. De plus, ils sont protégés par la constitution canadienne et la longue tradition de respect de leurs droits au Québec. (Voir l'inverse au Manitoba, en Ontario et au Nouveau Brunswick dans le passé.) Par leur coopération et leur participation dans la vie québécoise, les anglophones du Québec tiennent dans leurs aînés l'unité canadienne et peuvent aussi contribuer à la survivance de la langue française en Amérique du Nord.

D'autre part, je suis d'avis que les anglophones continueront à apporter une contribution importante au Québec. De plus, je crois qu'ils ont droit d'utiliser les moyens démocratiques pour protéger leurs droits, tels qu'ils les interprètent.

Enfin, je ne vois pas de contradictions entre les aspirations légitimes de la majorité et de la minorité au Québec, ou au Canada.

Hugh MacLennan écrivit avec noblesse de nos deux solitudes

Le titre de son célèbre roman est emprunté à de Rainer M. Rilke

"Love consists in this,
That two solitudes protect
And touch and greet each other.

L'amour consiste en ceci : ce sont deux soli-
tudes
qui se protègent, qui
s'éprouvent et s'accueillent
l'une l'autre.

Tel est notre défi : que deux solitudes se protègent, s'éprouvent et s'accueillent pour affronter ensemble les problèmes plus importants qui mettent en danger notre société.

SOMMAIRE

- i) Le débat linguistique se trouve sur le plan légal.
- ii) Le Canada est un État fédéral. Au parlement fédéral canadien appartient le pouvoir de légiférer sur certaines matières ; les législatures provinciales sont compétentes pour légiférer sur certains autres sujets.
- iii) La langue n'est pas un sujet législatif indépendant. Le parlement fédéral et les législatures provinciales peuvent légiférer en matière de langue en tant qu'accessoire d'un autre sujet sur lequel ils ont compétence.
- iv) La liberté d'expression garantie par l'art. 3 de la Charte québécoise et par l'art. 2(b) de la Charte québécoise et par l'art. 2(b) de la Charte canadienne est similaire et comprend la liberté de s'exprimer dans la langue de son choix.
- v) *Ford et Devine*—La Cour suprême note que l'emploi de la clause déroga-

toire est valable en tant que technique législative. La Cour offre des solutions politiques. Cela est déroutant et constitue un précédent dangereux.

vi) La clause « nonobstant » représente la mosaïque canadienne.

vii) Des avantages en faveur des anglophones existent sur le plan culturel et économique ; le tarif caché empêche des entreprises de nous envahir sans tenir compte de notre culture.

viii) La générosité est la clef.

TABLE DE JURISPRUDENCE

- 1 *Andrews c. Law Society of British Columbia*, [1989] 1 R.C.S. 143.
- 2 *Devine c. Québec (P.G.)*, [1988] 2 R.C.S. 790.
- 3 *Ford c. Québec (P.G.)*, [1988] 2 R.C.S. 712.
- 4 *Québec (P.G.) c. Blaikie*, (1979) 101 D.L.R. (3d) 394.

TABLE DES LOIS

- Loi constitutionnelle de 1867*, L.R.C. 1985, app. II, no. 5.
Charte canadienne des droits et libertés; partie I de la *Loi constitutionnelle de 1982*, constituant l'annex B de la *Loi de 1982 sur le Canada* (R.-U.), 1982, c.11. L.R.C. 1985, app. II, no. 44.
Loi sur les langues officielles, 1988, c.38.
Déclaration canadienne des droits, 1960, L.R.C. 1985 app. III, S.C. 1960 c.44.
Charte de la langue française, L.R.Q. 1977, c. C-11.
Charte des droits et libertés de la personne, L.R.Q. 1977, c. C-12.
The Alberta Bill of Rights, R.S.A. 1980, c. A-16; S.A. 1972, c.1.
Saskatchewan Human Rights Code, S.S. 1979, c. 24.1.
Code des droits de la personne, L.O. 1981 c.53.
Code des droits de la personne, L.M. 1987-88, c.45.
Loi sur le ministère de l'éducation, L.R.Q. 1977, c. M-15.
Loi sur le régime de retraite de certains enseignants, L.Q. 1986, c.44.
Loi sur le conseil supérieur de l'éducation, L.R.Q. 1977, c. C-60.
Loi modifiant la loi favorisant la mise en valeur des exploitations agricoles, L.Q. 1986, c. 54.



ACADEMY II

**Academy of the Humanities
and Social Sciences**

**PRESIDENTIAL ADDRESS:
WHY ARE CANADIANS DYING OUT?**



Why are Canadians Dying Out?†

ARE CANADIANS DYING OUT?

BEFORE ANSWERING the difficult question, why are Canadians dying out, one has the logical responsibility of asking whether they are dying out at all, an easier question than the other. There is no doubt that our society is dying out in a statistical sense: since about 1972 the current generation has ceased reproducing itself. This fact does not yet show in annual numbers. The natural increase is still four times greater than the increase through the much more newsy immigration. Although the average statistical mother "shirks her duty to Queen and country," there are so many baby-boom mothers around that their fertility below replacement does not yet show. But there is no doubt: the statistical mother is replaced by three-quarters of a daughter or, less gruesomely, 100 mothers are replaced by 75 daughters.

THE REVERSAL OF THE QUEBEC-CANADA-UNITED STATES ORDER

The drop has been phenomenal. For many decades the demography of North America could be summarized by three fertility curves. The U.S. curve was lowest, Canada outside Quebec was in the middle, and Quebec was highest. From the beginning of the century they went down together to reach a nadir in the thirties, then they went up together in the baby-boom explosion, always preserving the same monothonic order. In the late sixties an extraordinary flip-over took place. All three curves went down together, but the U.S. more

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† Presidential Address, Academy II, presented 7 June, 1988, University of Windsor. The capable research assistance of David Odynak and Fakrul I. Chowdhury is gratefully acknowledged.

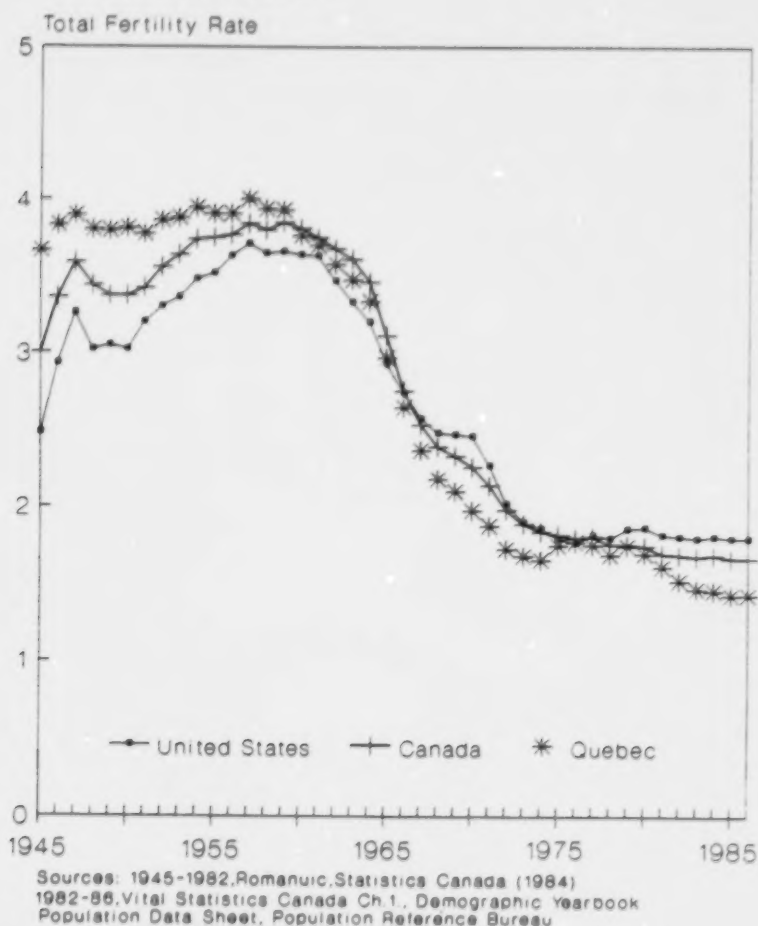


FIGURE 1 Fertility trends: Canada, United States and Quebec 1945-1986.

slowly, and Quebec faster. The three curves move now through history in reverse order: Quebec lowest, Canada outside Quebec in the middle and the U.S. highest. (For these trends since World War II see Figure 1.) To those with either an historical bent or with a sensitivity for the paradoxical, this is a profound change indeed.

WILL "IT" SHOW AND IF SO, WHEN?

The present (late 1980s) all-country rate below replacement is 1.7 children per woman as against the 2.1 required for replacement and eventual zero population

growth. The difference seems to be small and yet it is portentous. Allow me to cite an opening in one of my undergraduate courses: "have two children and the population dies out, have three and it explodes." It is self-evident that small oscillations around the figure of 1.7 will not affect the essence of the argument. Small downward movements will bring negative growth by the turn of the century. Small upward oscillations will extend the period till the first quarter of the next century. The actual timing of the emergence of negative population growth does not depend so much on the replacement level as on the baby-boom mothers leaving the reproductive age: born during the twenty years 1946-66, the most recently born will be leaving the reproductive age in 1996, assuming age thirty to be the end of effective reproduction. And in a modern society, reproduction after thirty does not amount to much in the aggregate.

The five European countries that already report yearly negative growth (Bourgeois-Pichat 1987) were tinkering with below replacement fertility for forty years and longer. Hitler employed the whole German state apparatus and inspired it with policies that only in his philosophy and ethics could have arisen, very thorough-going and all-penetrating; yet he never got the rate back to the replacement level.¹ Several other European countries are on the brink of joining the five in the realm of negative growth. In short, Canada is doing nothing special for a developed country; but behaving just like the others (e.g., Hagmann 1985; Hoffman-Nowotny *et al.* 1984; *Le Monde* 1989).

According to educated guesses, such a return to replacement fertility cannot be anticipated. A leading German demographer said so (Höhn 1986, 1989) during the family symposium organised jointly by the Federation of Canadian Demographers and the Royal Society of Canada in November 1986, in Ottawa. But demographers grouped around the League of Nations could not in 1945 envisage the population of the United States ever growing beyond 135 million. And who would imagine that Catholic Italy, after sending millions of its people abroad, would suddenly become a country of immigration. It was first, I believe, a Canadian demographer, Marc Termot, who identified this incredible fact in 1986 in Cosenza, at the meetings of the Association Internationale des Démographes de Langue Française. So what are the realistic chances that the total fertility rate, because that is the measure we have been using so far, will go back to 2.1, so that Canadians stop "dying out"?

PROPORTIONS EVER MARRIED DECLINING

Contrary to some popular beliefs, most of human reproduction still takes place within wedlock. Thus, the proportions marrying are the first variable to look at during a discussion of fertility. In Figure 2 we have the proportion of women married at each five-year age group since 1930. One can see that the two age groups important for fertility, 20-24 and 25-29, show consistent declines since 1960 for the country as a whole. Curves for Alberta have been drawn in to show

¹ "Given the Fuehrer a war time child"—even if the husband was temporarily busy in the snow-swept planes of Russia.

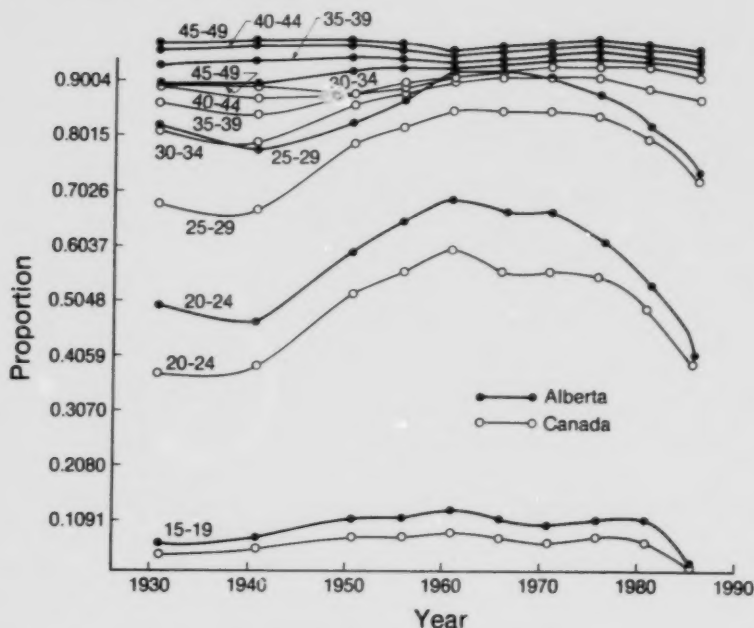


FIGURE 2 Proportion of ever married women; Alberta and Canada, 1931-1984.

that while a province has a history of proportions marrying (and of fertility) above the national level, it shadows the national behaviour. Eventually the differentials narrow and disappear.

AGE AT FIRST MARRIAGE

In Figure 2 the proportions married at older ages showed only mild declines, if any at all. Apparently, women were eventually getting married, but did so at later ages. How much later is shown in Figure 3. Until the 1970s the mean and median age at first marriage of brides and grooms was declining for a cumulative total of, say, three years in general over the first 35 out of the 45 years shown on Figure 3. Over the next ten years almost the entire pattern was reversed.² Again Alberta is drawn in to show that a province with ages at first

² The general flow of the argument is not affected by the difference between the mean and the median ages at first marriage. The mean ages are usually lower than the median ages, though their general pattern over time is similar and parallel. It might be illustrative to say why this is so. The large number of youngsters marrying pulls down the mean, but their youth leaves the median unaffected. At second and subsequent marriages the mean age is sometimes above the median, when spectacularly older couples marry affecting the mean but leaving the median unaffected by their golden ages.

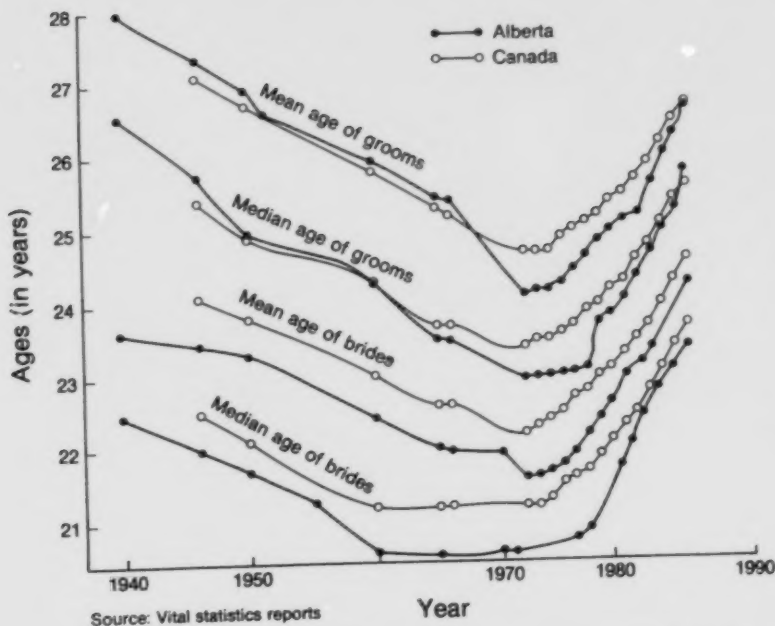
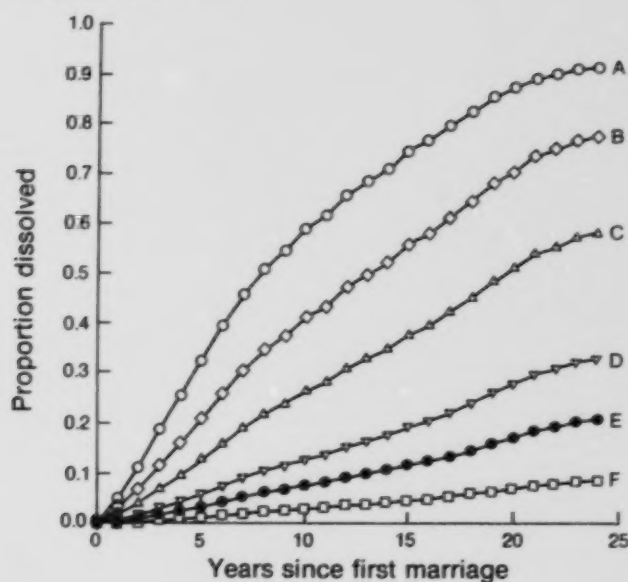


FIGURE 3 Mean and median ages at first marriage of brides and grooms; Alberta and Canada, 1940-1985.

marriage over 40 years, lower than the country as a whole, has now come close to the national level. Such convergences and disappearances of differentials in demographic variables take much of the fun out of socio-economic analysis.

The flat curve of the mean age at first marriage of brides from 1960 to 1970 draws attention; over the same period the mean age of grooms continued declining. Consequently, the age differences between brides and grooms at first marriage narrowed. These were the first baby-boom brides entering the marriage market in increasing numbers and not finding enough male partners, slightly older as the custom insists, from the previous smaller generation. This phenomenon is known in the literature as "marriage squeeze". Being resourceful North American women, they did not passively accept this situation. They engaged in "baby snatching" (and other unorthodox practices) to provide themselves with partners from outside the traditional, and to them unfavourable, marriage market.

Age at first marriage is still related to age at first birth and average age of child-bearing (the latter an approximation to average length of generation), though the link is looser than it was. When childless women, successful in the labour force, reach their mid-thirties, they realize that their continuing success



	Married	Premarital birth	Cohabited before marriage	Church attendance	Residence	Age limit at first marriage	Relative risk
A	1975 or after	yes	no	rarely	small urban	≤19	6.28
B	1965-1974	yes	yes	rarely	small urban	≤19	3.76
C	1975 or after	no	no	sometimes	large urban	≤19	2.19
D	1965-1974	no	no	sometimes	large urban	20-21	1.00
E	Before 1965	no	no	rarely	large urban	20-24	0.59
F	Before 1965	no	no	sometimes	farm	≤19	0.23

Source: adapted from PRL Reprint Nr 90, p. 404

FIGURE 4 Proportions of marriages dissolved by marriage duration for reference and comparison groups, Canada 1984.

is incompatible with the biological clock. Some decide to have a late child. Such events are newsworthy, but numerically insignificant. Age at marriage (and at birth) has been delayed recently by three years, because of decisions by large number of brides in their twenties, not because of a few at thirty-five.

PROPORTIONS DIVORCING AND DIVORCED INCREASING:
CORRELATES OF DIVORCE

I have shown how the importance of marriage declined in two ways: fewer people married and they married later. Now I shall address the question of what happens to marriages. They are subject to divorces and separations to a greater extent than hitherto. Figure 4 shows the probabilities of first-marriage dissolutions, by marriage duration and selected characteristics of women. Apart from the six characteristics whose cumulative effect is summarized in Figure 4, two have been dropped: religion and education, because they do not explain much. For example, one does not divorce, not so much because one is Catholic, but because one is religious, irrespective of whether Catholic or Protestant.

It is clear from Figure 4 that certain combinations of characteristics are more favourable to marriage survival and certain combinations are particularly unfavourable, almost deadly, to marriage. It is not often that all the unfavourable characteristics are combined in one bride, so that early divorce would be a virtual certainty. Figure 4 shows no such case, though combination A after 25 years results in 90 percent dissolutions. Recent marriages by youngsters are the greatest contributors to the relative risk shown in the last column of Figure 4.

We do have some objective data on the incidence of promiscuity, as a rule anti-natalist in its impact.³ Table 1 shows that a quarter of births are conceived before marriage, a proportion increasing in recent years. Most premarital conceptions result in shot-gun marriages. However, to see in them an indicator of promiscuity requires assuming a specific value system that might not prevail in Canada. In the past in Lower Saxony and other parts of Europe and the world, the young man would not marry until the future bride became pregnant. Shot-gun marriages were indicators of a pro-natalist value system. Which is it in Canada? The fulfilment of a welcome expectation or reaction to dire necessity? The answer will colour our fertility forecasts.

3 During a visit to family planning establishments in Liberia after this paper was delivered, I saw a number of posters carrying the family planning message, a difficult task in a society where school girls look with envy at a classmate who became pregnant. One of the posters drew attention to sugar daddies, showing an older office manager or clerk drawing to his lap a younger office girl. In the Liberian circumstances this need not be discouraging at all, but even in Canada the poster would have to be based on the assumption that sugar daddies make one pregnant. The more likely contribution of sugar daddies is to overall promiscuity and consequently lower fertility, though one would not base a society's population policies on such premises. One wonders whether such a poster is a manifestation of militant feminism, or rather a way of spreading family planning information.

TABLE 1 Timing of first birth according to first marriage, Canada 1984

Women with first birth	n	Premartial conceptions
Before marriage	279	8.6% 747 or 23.0%
7 months or less after marriage	468	
8-19 months	1044	
20-59 months	1150	
60 months and more	311	
All first births	3252	
Childless married	625	
	3877	
Childless never married	1438	
All respondents	5315	

Source: tabulations from Canadian Fertility Survey 1984

TABLE 2 Currently married contraceptive users by method, surveys of various years and regions, Canada

Method	Toronto ¹ 1968 (N = 1,132)	Quebec 1971 (N = 386)	Edmonton ² 1973 (N = 442)	Quebec ³ 1976 (N = 325)	Canada 1976 (N ⁴)	Canada 1984 (N = 2,400)
Age range	18-45	<45	18-54	20-40	≥15	18-49
Pill	43.2	38.1	46.2	28.8	39.2	15.0
IUD	3.1	3.9	5.7	8.5	6.0	8.0
Diaphragm	9.5	4.2	3.3	u	2.2	1.4
Condom	16.7	6.6	8.4	8.2	6.0	10.8
Rhythm	9.0	32.0	4.3	15.6	6.1	3.0
Withdrawal	8.8	7.9	2.9	4.3	3.4	1.3
Douche	3.5	1.5	u	u	u	u
Foam or jelly	3.4	2.2	u	1.1	2.5	0.7
Other	u	1.1	u	1.8	4.1	0.6
Female ster.	8.7	1.5	u	21.3	30.5	41.8
Male ster.	1.1	1.0	u	10.0	u	17.6
Total	107.0 ⁵	100.0	100.0	100.0	100.0	100.0

¹Includes women married only once.²Refers to women of all marital statuses. See Table 4.4 in Krishnan and Krotki 1976; also Odynak 1987.³Includes women aged 20-40 in March 1976, married for at least five years.⁴The survey was of adults aged 15 and older. An estimated 1,000 were aged 15-49.⁵Total exceeds 100 percent because for women using more than one method, all methods used are included.

Note: u = unavailable.

Source: Romaniuc, 1984, Table 3.1. Also included in PRL Reprint Nr 74, p. 215.

ABORTION AND STERILIZATION AS CONTRACEPTION

In Table 2 the recent history of contraceptive use in Canada is summarized. The main message is the dwindling importance of the pill and the increasing importance of sterilization. There are also two minor messages: notably the lower use of the rhythm method in Quebec, and the decline in the application of withdrawal in the country as a whole. Both methods are traditional, one church-approved, with a degree of effectiveness, apparently no longer acceptable.

The sterilizations in Table 2 add up to 58.4 percent of currently married contraceptive users, the highest reported proportion in the world.⁴ To those who consider sterilization a crude method of contraception, both physiologically and psychologically, this high proportion in a gadget-minded society calls for an explanation, but at this stage of social investigations in Canada, social scientists are unable to give one. What can be said with certainty is—at least—that those people could not contribute to a reversal of the fertility trend, should such a reversal be launched by others.

Because of the importance of sterilization in Canada additional attention is given to the matter in Table 3. The importance of religion in the first quarter of Table 3 is not striking but at least the four groups (males and females in Canada and in Alberta) illustrate consistent behaviour: Catholics sterilize somewhat less than Protestants.

The reported influence of religiosity in the second quarter of Table 3 is puzzling: the more frequent church attendance the higher the sterilization. One wonders what set of psychological characteristics leads to the connection. Desire for ultimate, simplistic solutions? Need to compensate for abusing nature? In the Canadian Fertility Survey, 1984, no attempt was made to answer such questions, because they were not anticipated.

In the third quarter of Table 3, the behaviour of women both in Canada and in Alberta with regard to sterilization is shown to have a high reverse correlation with education: the less educated the more sterilized.⁵

In the fourth quarter of Table 3, the influence of religiosity and divorces has been added (already used in Figure 4). The purpose of this addition is to contrast religiosity and divorces with religiosity and sterilization in the second quarter of Table 3. Religiosity and divorces give the expected result: the more religiosity the less divorce. Religiosity and sterilization give an unexpected result: the more religiosity, the more sterilization. Some of our discussants suggested that high religiosity is akin to low education; hence arrows of the same direction in

4 Where both partners were sterilized, only the female sterilization was counted.

5 The behaviour of males reported in Table 3 does not form an easily identifiable pattern. It is also not obvious what theoretical framework to apply to accommodate the availability of these data and the possible influence of macho considerations in the delicate area of male versus female decision-making.

TABLE 3 Sterilizations by sex, religion, religiosity, and education: divorce by religiosity, Canada and Alberta 1984 (percentages)

	Canada		Alberta	
	F	M	F	M
<i>Religion</i>				
Catholic	34.5 ↓	12.2 ↓	33.9 ↓	10.7 ↓
Protestant	38.7 ↓	14.8 ↓	34.2 ↓	15.5 ↓
Other	30.7	10.1	24.2	7.1
<i>Religiosity (church attendance)</i>				
Weekly	43.8 ↑	14.8 ↑	40.1 ↑	12.1 ↑
Sometimes	33.1	12.3	33.5	12.3
Rarely	32.4	10.9	29.1	9.0
<i>Education</i>				
≤8	68.8 ↑	9.1	76.3 ↑	10.0
9-11	47.4	16.5	49.5	19.7
12-13	30.0	13.7	33.3	10.7
≥14	25.5	9.5	21.8	12.4
Divorce probability for women years after marriage				
	5	15	25	
<i>Religiosity (church attendance):</i>				
Weekly	0.04 ↓	0.10 ↓	0.18 ↓	
Sometimes	0.09	0.19	0.27	
Rarely	0.16 ↓	0.33 ↓	0.47 ↓	

N.B.: The arrows are to draw attention within each characteristic to the category with greater incidence.

Source: tabulations from Canadian Fertility Survey 1984

the second and third quarters of Table 3 (with arrows of opposite direction in the fourth quarter).

In our bewilderment with regard to the influence of religion and religiosity we have recourse to Table 4, where a comparison is made of the behaviour of Catholic women in Quebec and in Alberta. About 10 percentage points more Catholic women use contraceptive methods in Quebec than in Alberta; of the contraceptive users 63 percent in Quebec are sterilized in comparison with 58 percent in Alberta. Quebec men report a markedly higher contribution to sterilization (19) than Alberta men (12). Depending on one's value premises one could see, in the higher Quebec percentage, the weak presence of macho characteristics or a greater readiness to share the burden of modern life.

The problem of abortion is avoided by the statisticians of Canada, as it was by the co-directors of the Canadian Fertility Survey, 1984. Many reports are available on attitudes towards abortion (e.g., Balakrishnan *et al.* 1988). Gallup made quite an industry out of it, and historical and legal works have been published (e.g., McLaren and McLaren 1986), but it is not known how the differential attitudes, the historical experience, and the legal framework affect the actual incidence and patterns of abortion. Once an attempt to measure the

TABLE 4 Catholic married women 18-49, their contraceptive practices, Alberta and Quebec 1984

	A	Q
All married women	100.0	100.0
Using a method	65.8	75.1
Pregnant, etc.	17.0	13.0
Sterile	9.9	9.1
Not using a method	7.3	2.9
<i>Users</i>		
Female sterilization	46.1	43.8
Male sterilization	11.9	18.9
Pill	10.5	16.9
IUD	6.1	6.3
Diaphragm	1.5	.0
Condom	6.3	8.2
Foam	.0	.0
Rhythm	3.1	3.7
Withdrawal	3.0	1.0
Other	1.5	1.2

Source: tabulations from Canadian Fertility Survey 1984
 Quebec column in PRL Reprint Nr. 90, table 6

incidence of abortion in Canada was undertaken through the randomized response technique [RRT] (Krótki and McDaniel 1975, 1977; McDaniel and Krótki 1979). When in Alberta, in 1974, 4000 legal abortions were registered, the public opprobrium was still such that only 2000 were admitted in face-to-face interviews, somewhat more through anonymous questionnaires, and 14,000 through the RRT. On commonsense grounds it is difficult to accept that this second crudest method of contraception would be so important in such a gadget-minded society as Canada. In many societies, abortion is the poor man's contraception, the incompetent man's contraception. One is reluctant to accept that it has this status in Canada. But then one could harbour similar thoughts with regard to sterilization, and yet Canada is the world leader in reliance on sterilization.

MILDER FORMS OF CONTRACEPTION

In comparison with sterilization and abortion, other methods of contraception tell a much less exciting story, partly because whatever Table 5 shows to have happened is reversible, at least to a certain extent. Both the immediate and long-term effects are likely to be less earth-shaking, society-affecting, family-destroying, value shattering, and controversial than sterilization and abortion.

Some of the material in Table 5 is already familiar from the earlier tables.⁶

⁶ Percentages given in Table 5 are somewhat higher than the corresponding percentages in Table 3 because 100 percent in Table 5 is somewhat smaller, being limited to "current users."

TABLE 5 Currently married women using contraceptives and their distribution by method, according to selected characteristics, Canada 1984

Characteristic	N	% using	Method					Total
			Female ster.	Male ster.	Pill	IUD	Condom	
Currently married	3,283	73.1	41.7	17.6	15.0	8.0	10.8	100.0
Age-group								
18-24	326	61.3	6.0	4.0	58.5	10.5	14.5	100.0
25-29	645	58.2	18.4	10.2	33.0	10.9	16.1	100.0
30-34	679	75.4	36.5	20.1	13.1	12.9	11.3	100.0
35-39	663	81.4	53.1	20.7	4.1	7.8	8.5	100.0
40-44	513	78.0	58.5	26.0	2.0	2.8	5.5	100.0
45-49	457	68.1	65.0	16.4	0.3	1.6	10.6	100.0
Birth expectations								
Expect more	761	53.2	0.0	0.0	49.0	12.5	23.0	100.0
Expect no more	2,509	79.4	50.2	21.2	8.1	7.1	8.1	100.0
Religion								
Catholic	1,544	72.2	42.2	17.4	16.2	7.8	8.8	100.0
Protestant	1,224	74.4	44.1	19.4	13.6	7.4	10.2	100.0
Other or none	511	73.6	34.4	13.8	14.8	10.1	18.0	100.0
Church attendance								
Weekly	1,017	69.4	46.1	17.2	9.9	6.0	10.9	100.0
Sometimes	1,277	75.2	40.9	16.7	17.6	8.4	10.8	100.0
Rarely or never	985	74.3	38.6	19.2	16.6	9.4	10.5	100.0
Education (in years)								
≤8	296	64.9	71.0	11.9	7.3	2.6	4.7	100.0
9-11	810	73.1	50.3	22.1	11.5	5.2	5.9	100.0
12-13	1,174	73.8	37.0	19.0	19.0	8.1	10.1	100.0
Nativity								
Native-born	2,751	73.3	42.0	18.3	16.3	8.2	9.2	100.0
Foreign-born	532	72.4	40.5	14.0	8.6	7.0	18.7	100.0

*Diaphragm, spermicides, rhythm, withdrawal and others.

N.B.: The arrows are to draw attention within each characteristic to the category with greater incidence.

Source: adapted from PRL Reprint Nr 74, p. 212

The 40 percent non-sterilized fall back on the pill, the condom, IUD, and a combination of other methods, in that order of importance. We do not know whether those aborting (anywhere between 60,000 and 150,000 annually) come out of the 40 percent of users reported in this table or out of the 15 percent of non-users (Balakrishnan *et al.* 1985, Table 1), though most likely out of the non-users currently married (5.7), never married (4.5), or previously married (1.2).

Some of the new information in Table 5 is: female sterilization is increasing with age, pill use is decreasing; male sterilization is increasing with age less decisively, and males married to women aged 45-49 refuse to contribute to the trend; not that it matters much. As this paper is being typed, their female partners are already off the stage. The two lines on birth expectations in Table 5 tell us nothing, and are merely a credit to the consistency of results and to the high quality of the field work.⁷ The foreign-born must consist of two kinds: those who adjust quickly to Canadian norms (some even before they come to this country; Basavarajappa and Halli 1986) and use sterilization in a manner similar to Canadian-born, and those who use traditional methods (popular in their home countries): condom and "other," and to a lesser extent the pill. Obviously, the potential for reversal in fertility trends among users of orthodox methods is greater than among the sterilizers, but they are a small group. The overall lesson from this and other evidence is that from the perspective of fertility immigration is inefficient: immigrants may be flooding the country with their own persons, but not with their children.

FERTILITY AS A DEPENDENT VARIABLE

The previous section dealt with what might be called the mechanics of family planning and birth control: which methods are used by different socio-economic and demographic groups. In Figure 5 these intermediate variables are shown as determining the dependent variable of fertility, but being themselves influenced by still other variables. There is no end to these other explanations: socio-psychological and socio-economic, some stressing the societal or macro level, some preferring to operate on the individual and family or micro level (e.g., McDaniel 1984a, 1984b). The least metaphysical and, therefore, easiest to discuss are female labour force participation (flfp) and the economic circumstances of the family.

FEMALE LABOUR FORCE PARTICIPATION (FLFP)

It is a reasonably well-established principle in social sciences that fertility and flfp are conversely related: one interferes with the other, though it is less certain which way the causation works. Absence of children enables a woman to join

⁷ Half of those expected to have children are on the pill and are apparently unaffected by the possibility of long-term effects of its use (non-smokers under age 35?).

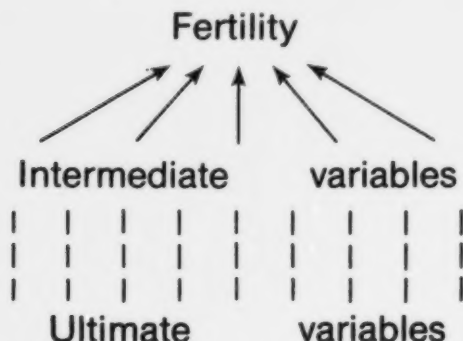


FIGURE 5 Fertility as a dependent variable: a schematic presentation.

the labour force, or she cannot have children as an effective labour-force participant, or she must join the labour force to provide for the children. The principle has been with us for a long time, although some of us remember that in the 1940s U.S. women did all three at the same time, contradicting sociological theory: they went to school in larger numbers and proportions, had increasing number of children, and joined the labour force to a greater extent.

Table 6 shows that flfp varies little with parities one, two, and three, though a more refined table would show a more qualified picture. Only with parity four and higher does the flfp begin to drop. Parity zero or childlessness provokes schizophrenic conclusions. On the one hand, only by excluding parity zero do we obtain the expected result, that women never in the labour force have more children (2.70) than women ever in the labour force (2.25).⁸ On the other hand, childless women seem to be a breed of their own. They make up 60 percent of those never in the labour force. Peculiar and particular parasites? Neither increasing the national income nor increasing the nation's population size? Part of the trouble lies with the literature on childlessness, which is centred on the suggestion that a new mode of living is emerging.⁹ In fact, periods were known in the past when childlessness was more prevalent than currently. By getting their basic facts straight, writers on childlessness could provide real insights into their topic and help us collectively to understand what is happening to society.

⁸ Elaborate and painstaking attempts to pinpoint the influence of flfp on fertility and the other way round, mainly through the life-cycle approach and multivariate analysis, have not, so far, yielded additional insights.

⁹ Some people tend to make mass myth out of their personal experiences. A prominent social scientist on exchanging a fourth wife developed an entire socio-psychological theory explaining why increasingly younger partners are inevitable.

TABLE 6 Female labour force participation by mother's parity, Canada 1984

	Parities					
	All	0	1	2	3	+3
All women	5315	1886	860	1407	737	1162
Women ever in labour force	4536	1442	790	1292	665	1012
Women never in labour force	779	444 ¹	70	115	72	150
Women never in labour force as %age of all women	14.7	23.5	8.1	8.2	9.8	12.9
	All women	Women ever in labour force		Women never in labour force		
Number of children per woman, including women of all parities	1.48	1.60		1.16		
Number of children per woman, excluding women of parity 0	2.29	2.25		2.70		
Women of parity 0 as %age of all women	35.5	33.1		57.0		

¹Including 241 full-time students

Source: tabulations from Canadian Fertility Survey 1984

POVERTY STRICKEN CANADA AND FEMALE-SELECTIVE INJUSTICES

Poverty-stricken Canada, like injustice-ridden Canada, is one of the cliches that are so generally accepted that few question them. In fact, to suggest that Canadian income is higher and more evenly distributed than in most societies and that there is less injustice, less arbitrariness and more respect for due process than in most societies, is running the risk of being labelled a reactionary. From the perspective of this paper the cliche about poverty-stricken Canada is of interest as an explanation of Canada's low fertility. The opinion prevails that "Nowadays it takes two salaries to keep a family going." In fact, while the national income of Canada doubled and trebled (in constant dollars, it goes without saying), Canadians put themselves into a state of mind believing that they are getting poorer and consequently cannot afford to have children. This perception may be more effective than objective measures in influencing decisions based on these perceptions. But even in terms of perceptions Canadians do not feel uniformly miserable, as can be seen from Table 7.

At the time of marriage nearly four times as many (26.4%) thought themselves better off than their peers and four times as few (7.0%) thought themselves worse off. At the time of the interview they were even more cheerful than at the time of the marriage; seven times as many (34.4%) thought themselves

TABLE 7 Social mobility in the eyes of CFS respondents, Canada 1984

		Own standard of living compared with same age group at the time of interview Q915				
		(1) better	(2) same	(3) worse		
Own standard of living compared with same age group at time of marriage Q914	Better	14.8%	10.3%	1.3%		26.4%
	Same	17.4%	46.8%	2.3%		
	Worse	2.2%	3.8%	1.0%	=	7.0%
		34.4%		= 4.6%		n = 3699
		Standard of living since marriage				
		Improved (4)	Remained same (5)	Worsened (6)		
		17.4	14.8	10.3		
		2.2	46.8	1.3		
		3.8	1.0	2.3		
		23.4	+ 62.6	+ 13.9	=	100.0

Q914: Question 914: When you got married, or when you started living together, was your standard of living better than, the same as, or worse than that of people you knew in your age group?

Q915: Question 915: And now, is your standard of living better than, the same as, or worse than that of people you know in your age group?

Source: tabulations from Canadian Fertility Survey 1984

better off. We might be pushing our luck too far by combining these two sets of subjective answers in the lower part of Table 7. The combination does not increase the objective quality of the data. For whatever it is worth, 85 percent thought themselves better off or the same since marriage.

In Table 8, first one-third, the expected family size is about the same (2.37, 2.33, 2.34), regardless of financial success. Whatever view the female respondent had on the well-being of the couple at the time of the marriage in the second third of Table 8, it is not correlated with the income at the time of the interview. The current income reported in the middle third of Table 8 is about the same for all three groups, suggesting that all income groups have about the same proportions of cheerful wives and grumbling wives, that is to say, the cheerfulness of wives depends on their nature, and not on the family income. Arguably, the correlation need not be directly relevant because of the passage of time and faults of recollection, but it does imply a loose connection between the cheerfulness of Canadians and their dollars. However, answers to question 915 in the last third of Table 8 tally closely with the reported income: better-offs report \$39,006, no-change report \$34,073, worse-offs \$23,761. Yet, the poorer they are (or the worse they feel), the more children they expect.

One may conclude not only that the perception of poverty-stricken Canada is

TABLE 8 Some subjective answers to the attitudinal questions compared with family income, Canada 1984

	n	Average family income in \$ ¹	Expected family size ⁴
From a financial standpoint do you feel that you have			
Q800 Been very successful?	1195	39,546	2.37
Been reasonably successful?	3631	31,348	2.33
Not been successful?	476	18,572	2.34
Missing information	13	—	
When you married, or when you started living together, was your standard of living . . . than that of people you knew in your age group?			
Q914 Better	979	37,071 ²	
The same	2471	35,501 ²	
Worse	262	35,701 ²	
Missing information ³	1603		
And now, is your standard of living . . . than that of people you know in your age group?			
Q915 Better	1277	39,006	2.40
The same	2259	34,973	2.44
Worse	175	23,761	2.63
Missing information ³	1604	—	

¹These dollar values have been calculated on only part of the respondents, that is excluding the 679 respondents, who reported neither family income nor any component part of the individual income so that family income could not be imputed.

²These dollar values give the 1984 income, not the income at the time of the union.

³Consists mainly of 1592 never married.

⁴Similarly to 1 above.

Source: tabulations from Canadian Fertility Survey 1984

faulty in itself, but that it does not seem to affect family building plans in the direction expected. We are left with the conclusion that income (its relative variety?) may not be a depressant at the level of the individual family, but that at the societal level the psychosis of general poverty works. To clinch the issue with a puzzle: in Figure 6 live births are plotted against family income. For Canada as a whole, excluding the Atlantic provinces, the behaviour is as expected by economic theory: the number of children rises with income, though very mildly. In the Atlantic provinces parents seem to be impressed much more with the first \$40,000 of family income, somewhat less with higher levels of income. We obviously still do not know enough about the interrelations between dollars and children, but that Canada is poverty stricken does not seem to be the explanation. Money does not work at the family level; it does not work at the provincial level. In fact and in logic it should not work at the national level. There must be other explanations.

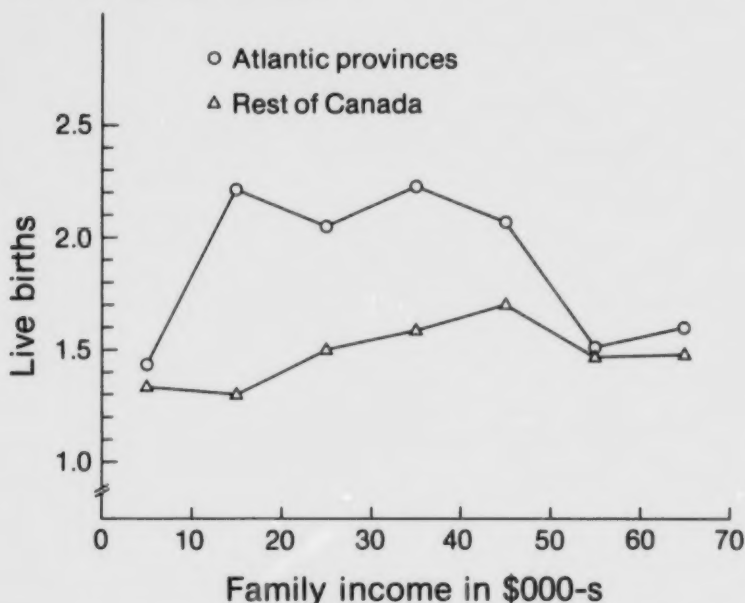


FIGURE 6 Live births and family income 1984, Atlantic provinces and the rest of Canada.

BRAINWASH PENETRATED THE MOST NEUTRAL SANCTUARIES

The belief in poverty-stricken Canada and the worsening of the economic situation is not merely a feature peculiar to North American psychology or the stage through which this feature of social psychology is moving just now. It is fed subtly through the type of information reported and the emphasis with which the information is presented. The message is the message.

For example, on the front page of *Daily Statistics Canada* for 20 April, 1988, it is stated that the "average . . . family income declined . . . from 1980 to 1985" (in constant dollars). One has to look inside the bulletin (p. 12) to find that this decline of 1.2 percent was accompanied by a drop in family size from 3.26 persons to 3.15 persons. The decline in family size caused a consequent increase of 2 percent in the income per family member.

The inside of the bulletin also reveals that the decline was limited to the period 1980–1984, that it began to reverse itself in 1985 and continued the recovery in 1986 (p. 11). As another aspect of the same editorial tendency, the overall incidence of poverty is reported on the front page to have increased from 1980 to 1985. One has to look inside again to find the admission that "the

incidence of low income declined in . . . [1986] to a level . . . below the 1980 level" (p. 14). The editors clearly kow-tow to the Canadian preference for feeling miserable.

Why have I dug up these nuances and included them in this paper about the demographic future of our society? The reason is the probable and presumed anti-natalist impact on the family building plans of the population. Other features with an impact on the society might be coming out of the 1986 population census, features ringing an anti-natalist bell. There is no need for editorial assistance when there is no such anti-natalist message. The basically incorrect statement that family incomes declined is qualified by the explanation that families where wives work, did better than families where wives did not work, an outcome reinforced by women's position improving even faster than that of men.

The discouragement of marriages is reinforced by Table 5 on p. 17 of the publication cited, where it is shown that never married women aged 55 and more earn more than men. The age distribution of the marital category "never married" starts at age 15 with 85 percent of male earnings and concludes at 65 plus with 104 percent, the average for all age groups being 90 percent, a far cry from the 60 percent firmly placed in public belief and persistently quoted. There is little public awareness of these figures and for the sake of a peaceful life one perhaps should not dwell on them unduly. Once brought into the public domain they would probably have in the first instance an anti-nuptiality impact, and only subsequently an anti-fertility one. For individual decision makers, the increase in public awareness is not needed. They are likely to see for themselves that they will be better off if they refuse the marriage offer from an increasingly disadvantaged male. It is fine to work while married instead of having children, but it is finer still to work without being married.

WILL THE EARLIEST EASTERLIN THEORY WORK IN CANADA?

A number of conclusions are available from tables and figures not shown in this paper:

- i) reverse correlation between parity and wage over the years at constant dollars;
- ii) women with lower parities can apparently afford to be choosier on the labour market;
- iii) one explanation of phenomena (i) and (ii) would be acceptance of psychological predestination for the same woman to have high parity and be disadvantaged in the labour force.

Even if it were shown that the higher the parity the greater the disadvantage of the mother in the labour force, it is not clear whether Canadian society has

already adopted the value system according to which a mother must be "compensated" for having children.¹⁰ Some couples may still fall back on individual decisions and responsibilities. Nor is it clear whether the adoption of a value system stressing social responsibility would be pro-natalist or anti-natalist.

Suggestions have come from respectable typewriters and word processors that fertility is such an unnatural proceeding for a woman, that one must wonder that it has ever been undertaken. Only contraceptive ignorance and antropological inertia can be explanations. In the context of such literature the women's readiness to go into the labour market with all its discriminations can be more easily understood; they must hate married life and motherhood even more. If anything of this is realistic then Easterlin has no role to play.

For each parity, declines in real wages, reported on the basis of recollection, apparently took place over the 20 years under investigation:

- a) it could be that respondents were over-reporting for the early part of the 20 years; it was somehow beyond their comprehension and belief that in these distant years they could have been earning "that little" in terms of current dollars;
- b) in accordance with the Easterlin theory, baby-boomers suffered, while preceding smaller generations, aged 40–49 in 1984 (that is, born 1935–1944) benefitted and had higher reported real wages than those of the following baby-boomers;
- c) increased female labour-force participation (that is, increased supply), did what it should have according to economic theory; it depressed the price of labour, that is wages.¹¹

The first baby-busters, born 1966–1968, by 1988 entered the labour market aged 20–22. Observers of the social scene expect for these new recruits, in accordance with economic theory, decreasing rates of unemployment, increasing relative wages, telescoping wage differentials by age with older age groups (the baby-boomers) and . . . development of euphoric attitudes towards family building. The next few years will decide for or against the confirmation of the theory.¹² The complete and elegant Easterlin operates within the framework of given consumer preferences for material goods, changing pressures of liabilities, changing tastes for goods and services, changes in relative income, and the like (e.g., Hawthorn 1970:62).

¹⁰Compensations result by definition in distortions other than the one intended. They may all be welcome socially and individually, but the point is that social scientists did not pose the relevant question and did not seek relevant answers.

¹¹No attempt has been made in the literature to separate the influence of increased female labour supply on the market and genuine female-selective discrimination as factors explanatory of the sex-differentials in wage rates.

¹²For a recent elaboration of the Easterlin theory see Easterlin and Crimmins 1985, but earlier versions are more directly relevant to the argumentation of this paper.

TABLE 9 Mean number of children ever born by mother's age at first birth and mother's marriage cohort, Canada 1984

Marriage cohort (1)	Age at first birth			
	Less than 20 (2)	20-24 (3)	25 and over (4)	All ages (5)
All cohorts	2.96	2.46	1.91	2.39
Before 1965	3.85	3.09	2.23	3.15
1965-1969	2.71	2.53	2.69	2.44
1970-1974	2.44	2.30	1.95	2.19
1975-1979	2.25	1.83	1.60	1.80
1980-1984	1.66	1.33	1.27	1.39
n	664	1586	1002	3252
Fertility below replacement				
Childless married				625
				3877
Childless never married				1438
All respondents				5315

Source: adapted from Rao & Balakrishnan 1986

THERE IS NO FREE LUNCH; THERE IS NO CATCHING UP

Most of fertility arises still within marriage, even if less so than in days gone by. It agrees with common sense and is supported with voluminous data, that the later the age at marriage the lower the fertility, and vice versa, the earlier the age at marriage the higher the fertility (except for the earliest and precocious ages, when in the case of very young brides maternal health is impaired).

Table 9 gives national data from the Canadian Fertility Survey, 1984. Looking at the table first horizontally, we see that for each marriage cohort, the later the age at first birth the lower the number of children. There is not one exception. Looking at the table vertically, we see that for each age at first birth the number of children ever born decreases the more recent the marriage cohort. There is not one exception. What it means is that whether the first birth takes place early or late, once the decline sets in, it affects everybody. Admittedly, the decline from marriage cohort to marriage cohort is exaggerated in that the more recent cohorts are subject to what is called in the literature censoring or truncation, and no allowance has been made for this phenomenon in Table 9. The space in the table marked "Fertility below replacement" is still small and

changes could take place. It is this area where the action is and it deserves watching for signs of change. If there is no change, then Canadians will be dying out in the statistical sense and one or two other senses. Obviously, the land will not become depopulated. Something will fill it up, but it will be a different country.

Not shown in my tables, but available elsewhere, is the fact that the high fertility of early starters over late starters has been steadily decreasing. What used to be a difference of the order of two births is likely to be narrowed to half a child. How do the early starters ensure that they do not get too much ahead of the late starters? As has been shown in the section on sterilization and in related literature, they do it mainly through the application of this radical and irreversible method. Tubal ligations are particularly popular among the less educated, who make up a large proportion of the early starters with, until recently, high lifetime fertility (Balakrishnan, *et al.* 1985).

Early childbearing will apparently still continue to exact the price of foregone education for the mother, consequent limited chances for the child, increased probability of marital dissolution, and negative economic situations for the couple. Thus, the crudity of the experience shows itself not only in its immediate application, but it stays with the users whether they have recourse to sterilization or not. The original villain of the piece is not sterilization, but the early age at first birth. But having gone into early childbirth, then in the prevailing value system of the society and the clumsiness of the social classes most affected, a mother has no other, equally easy way out as sterilization.

There are various ways of denying the alarmistic dimensions of the presentation of this paper.

- 1 It has happened before. Not true. There were some dips below 2.0 in the past, but they were short-lived and never so deep.
- 2 An upturn can be expected, if it has not already started. The fact is, that as of today, it has not and there is no sign of change. The possibility is beyond our expectations.
- 3 Immigrants will fill in the empty spaces. There is an immigration program for moneyed entrepreneurs, why not for orphaned adoptees from, say, South Korea.
- 4 The numbers required, when the decline reaches German proportions, would be so large that arrivals would swamp the anthropological culture of Canada. The new arrivals tend to pick up the low fertility habits and continuing replenishment by immigration would be necessary.

What of the future? Will population policies help? Assuming that they are willed by the society, can they help? Experience of many attempts in the world suggests that their effect is short-lived. Basically, we do not know what would help.

Allow me to draw a quick parallel with crime. The Age of Enlightenment

started with the conviction that poverty and ignorance were the prime causes of crime. Over the past forty years an unprecedented growth of crime has been accompanied by an equally unprecedented growth in living standards and in the spread of education. Note that these two developments are also used as explanatory factors in the study of fertility.

Criminologists then began to look to new, specific and narrower causes: parental behaviour, urban areas, population densities, poverty, poor housing, television, social and physical mobility, decline in family life, decline in religion. Some of them are operational, say, poor housing, but no government of a developed country could tackle, say, decline in religion.

Similarly, in the realm of population policy a large number of variables has been studied, but few are operational. Much depends on the societal will. When in the budget of May 1986 the deindexation of old age pensions and of family allowances was proposed, the outcry of the elderly cancelled the deindexation of their pensions. Nobody spoke up on behalf of mothers.¹³ We do not know whether child care programs are pro- or anti-natalist in their influence. The point is that they were not considered from that standpoint.

These programs were considered from the standpoint of feminism and possibly egalitarianism. Would it now be an exaggeration to say that feminism made the "mere" raising of children discreditable? The new career woman in her late thirties with one child as a concession to posterity or as a new "life experience" is, after all, a heroine of our age. Yet it could be argued that career women should be ready to follow non-traditional paths without trying to reeducate everybody and seeking mass approval from large numbers choosing more traditional routes. Presumably the attempt to embalm and ennoble either one or the other with ointments of superiority has no place in objective reasoning. Is that a realistic stand to take in the closing years of the twentieth century? Probably not, though North American societies are volatile and have been known to ride pendulums.

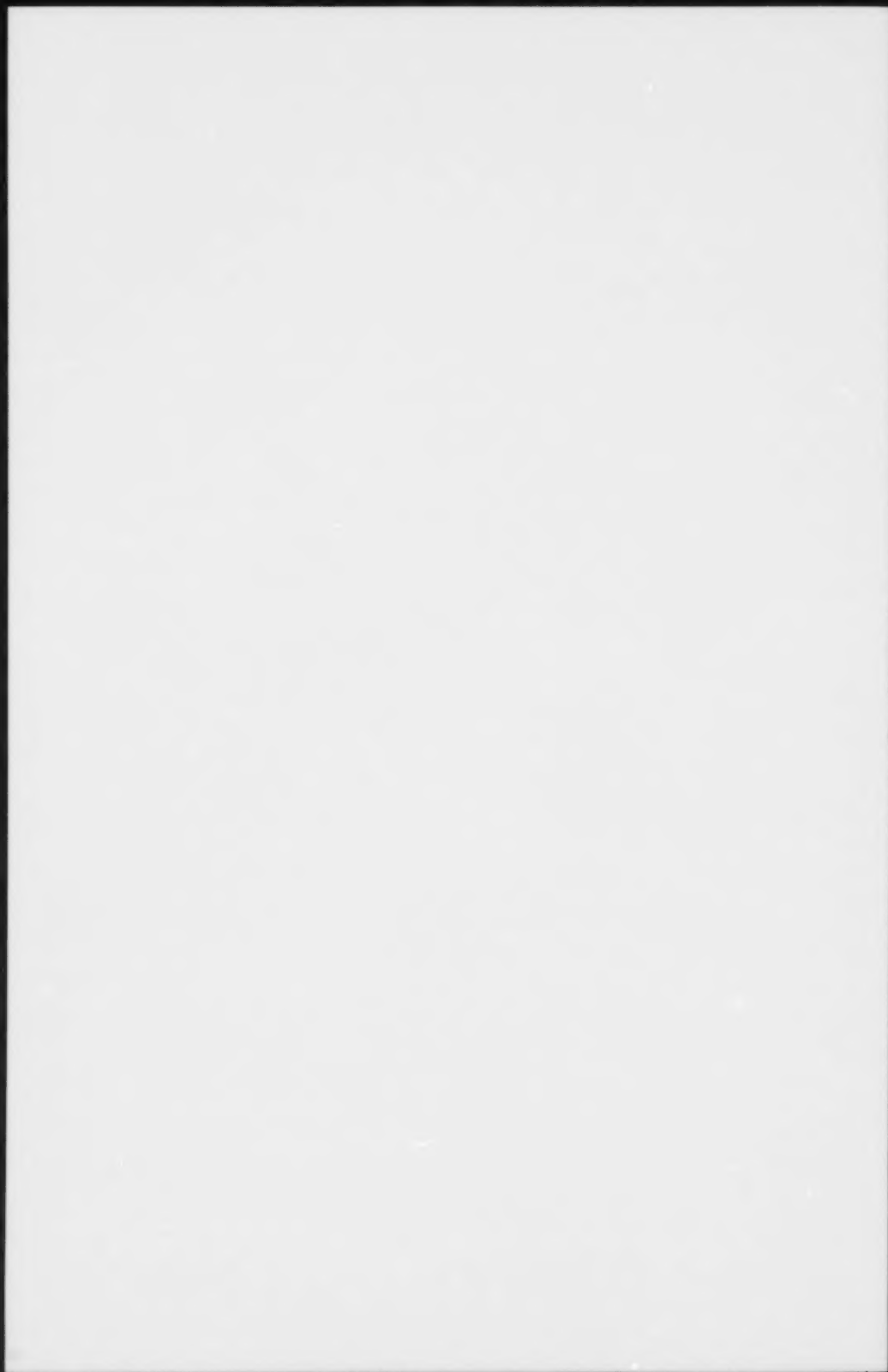
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13 In this century at the sinking of the *Titanic*, women and children were the first to climb into lifeboats. Even today, a mother with a child would not treat with disdain the offer of a seat.

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ACADEMY II

**Academy of the Humanities
and Social Sciences**

SYMPOSIUM:
THE STATE AND THE ARTS



The Hard Facts: Perspectives of Cultural Economics[†]

"Better Socrates dissatisfied than a fool satisfied." (J.S. Mill)

THE FABRIC of intellectual history is partially woven from the threads of coincidence. One such thread involves great scholars who, distant in space yet near in time, raise the same seminal question, or propose similar answers to fundamental questions troubling the contemporary ethos. An example drawn from cultural economics and involving a growing divergence between the economic theory of value and evolving social reality will demonstrate.

In May 1972, Tibor Scitovsky chose the title: "What's Wrong with the Arts is What's Wrong with Society" (Scitovsky 1972). Later that year, in September 1972, Kenneth Boulding in his seminal article "Towards the Development of a Cultural Economics," raised the related question:

The founding father of economics, Adam Smith, had a strong sense of the cultural matrix of economic phenomena. One of the most interesting of the unasked questions of intellectual history is how the science of economics should have lost this sense and become an abstract discipline void of almost any cultural context. (Boulding 1972; 267)

And in December 1974, John Meisel, in his presidential address to the Canadian Political Science Association (which seven years before had separated from economic colleagues in the Canadian Political Economy Association), argued in "Political Culture and the Politics of Culture":

political science has neglected many critical aspects of . . . leisure culture and . . . this state of affairs ought to change. To remedy this neglect . . . [w]e shall have to ask ourselves whether all that is needed is an additional focus for research—whether we

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merely need to explore and work a heretofore neglected field—or whether what is required is a fundamental reorientation of the discipline, like those associated with the behavioural and post-behavioural revolutions. (Meisel 1974: 601)

To indicate acceptance of Scitovsky's statement, to answer Boulding and, at the same time, to shed some light on Meisel's question will require a brief review of the history of economic thought, analysis of available empirical evidence, and presentation of a theoretical framework explaining the contribution of art and culture to economic growth and development. These three steps will, for purposes of this paper, establish what can be called the *hard facts* from three perspectives of cultural economics—historic, empiric, and theoretic.

HISTORIC

Economics, as a discipline of thought or "a recognized field of tooled knowledge" (Schumpeter 1949: 143) emerged in the late eighteenth century at about the same time as political rights of the individual became a reality with the American and then the French Revolutions. Adam Smith, writing just as the flood tide of revolution began to inundate the Old Order of Privilege and Preference, demonstrated a strong awareness of the cultural matrix of economic phenomena (Smith 1776). Two of his successors, however, stripped economics of its cultural context—Jeremy Bentham and Karl Marx.

Jeremy Bentham (1748–1832)

Jeremy Bentham was a lawyer turned reformer. He believed in "La Raison" (Schumpeter 1949: 115) as the ultimate test of value to society. To Bentham, neither God nor some "natural harmony" was at work in human affairs. Furthermore, it was Bentham who introduced the premise that culture, custom, and tradition are not relevant to economic analysis:

On the whole the most influential of the immediate successors of Adam Smith was Bentham. He wrote little on economics himself, but he went far towards setting the tone of the rising school of English economists at the beginning of the nineteenth century . . . [who] therefore were inclined to think that the influence of custom and sentiment in business affairs was harmful, that in England at least it had diminished, was diminishing, and would soon vanish away: and the disciples of Bentham were not slow to conclude that they need not concern themselves much about custom. It was enough for them to discuss the tendencies of man's action on the supposition that everyone was always on the alert to find out what course would best promote his own interest and was free and quick to follow it. (Marshall 1920: 628–9)

The opening terror of the French Revolution, its Napoleonic second act and its denouement—the reactionary Holy Alliance—restrained Bentham, a pragmatic political reformer, from advocating the logical political conclusions

of his radical egalitarianism, i.e., redistribution not only of wealth but also of property.

Another way in which he influenced the young economists around him was through his passionate desire for security. He was indeed an ardent reformer. He was an enemy of all artificial distinctions between different classes of men; he declared with emphasis that any one man's happiness was as important as any other's, and that the aim of all action should be to increase the sum total of happiness; he admitted that other things being equal, this sum total would be greater the more equally wealth was distributed. Nevertheless so full was his mind of the terror of the French Revolution, and so great were the evils which he attributed to the smallest attack on security that, daring analyst as he was, he felt himself and fostered in his disciples an almost superstitious reverence for the existing institutions of private property. (Marshall 1920; 628-9)

While the political implications of Bentham's radical egalitarianism were held in check by terror of revolution, it held at least four significant implications for economic thought. First, Bentham assumed that all the pleasures and pains of an individual resulted from simple physical sensation and could be measured and added into a quantity of "Happiness." Assuming the happiness of each individual was weighted equally, individual "happinesses" could, in turn, be summed into a social total that was equal to the common good or welfare of society. Thus the social good was nothing more nor less than the sum of individual sensations of pleasure or pain—the only ultimate realities (Schumpeter 1949; 131)—the two sovereign masters of humanity (Clough 164; 825).

The assumption that pleasure and pain could be measured became *reified* as money. Lack of money was the source of misery. Enough money was the source of happiness. This belief led to equating value to society—of an object, product, process or person—with its dollar price in the marketplace. This conclusion fostered the development of an illusory calculus that became the centrepiece for the economic theory of consumer behaviour—the marginal utility theory of value (Blaug 1968; 304). It also provided Marshall and Pigou with the foundation for contemporary welfare economics.

In the Benthamite tradition, however, maximizing pleasure was restrained by the tenets of ethical hedonism, a very Protestant ethic. This ethic, beyond emphasizing the moral value of work, involved social inhibitions against conspicuous consumption (Veblen 1899). Such ethical or moral restrictions were reinforced by the lingering effects of feudal sumptuary legislation which made "status forgeries illegal and created the disincentive of trial and punishment" (McCracken 1988; 33). But, as noted by Daniel Bell (Bell 1976; 20-22), when the Protestant ethic collapsed during the Industrial Revolution, only hedonism remained—in all its unrestrained, irrational incarnations. Without a generally accepted moral code, the law became the only accepted social institution to moderate individual pleasure-seeking. Benthamite traditions concerning crime and punishment continue to guide both the law and economic

research, e.g., as in Bentham's famous and seemingly plausible dictum "the more deficient in certainty a punishment is, the severer it should be." (Becker 1968)

Second, for Bentham culture, custom, and tradition were irrelevant to economic analysis because they were irrational and interfered with application of pure reason in the *maximization* of happiness, a neologism coined by Bentham himself (Bell 1976; 224). But this radical individualism flies in the face of demonstrable traditional and ideological attachments that shape an individual's actions into collective acts. (Bell; 70-72)

Third, in the Benthamite tradition all men were not just equal but also nondescript and malleable (Schumpeter 1949; 132-4). Therefore, tastes were the same, or would become so through another Benthamite policy—compulsory education. Questions of taste and style were, therefore, irrelevant to economic investigation.

Even aesthetics were affected, shrinking to analysis of the pleasurable or painful sensations evoked by a work of art. In this aesthetic, a thing is beautiful because it pleases; it does not please because it is "objectively" beautiful (Schumpeter 1949; 126-7). This aesthetic, combined with the Benthamite emphasis on *functional utility*, meant that application of artistic effort to contribute *beauty of form* to the function was rejected as "irrational." In industrial design and architecture, this aesthetic reached its logical conclusion in the aphorism: *form follows function*. This contributed to the development of a simplistic and sterile consumer theory of economic behaviour and a theory of production in which design is not, in theory, considered a factor of production.

Fourth, Bentham's utilitarianism reshaped not only the definition of means but also the ultimate ends of human activity. As a philosophy of life it ruled out, as contrary to reason, all that is really important to the individual. The Utilitarians are credited with "having created something that was new in literature . . . , namely, the shallowest of all conceivable philosophies of life that stands indeed in a position of irreconcilable antagonism to the rest of them." (Schumpeter 1949; 132-4)

Karl Marx (1818-1883)

While Bentham was restrained by the terror of revolution, Karl Marx saw revolution as the hope for the working man and for the final triumph of human reason in economic and political life. Perhaps this belief reflects the fact that Marx was born into the romance rather than the terror of revolution. In many ways, however, Marx is the direct heir of Bentham. In a sense, he simply extended Bentham's logic beyond the inhibiting fear of revolution.

By the mid- to late-nineteenth century, political economy had split into two opposing camps, reflecting, among other things:

- conflicting views concerning the impact of culture or stage of cultural development on economic behaviour—yes for Marxists, no for the mainstream;

- conflicting theories of value, specifically whether labour was the only productive economic factor as Marxists believed, or whether capital was also productive as the mainstream contended;
- conflicting beliefs in the efficacy of collectivist solutions to political economic problems such as the role of the Party as revolutionary vanguard and the dictatorship of the proletariat *versus* individualist solutions such as pluralistic democracy and the market mechanism; and,
- conflicting theories about the legitimacy of private property deemed exploitive by the Marxists and essential by the mainstream.

The intensity of this schism became, by the mid-twentieth century, as potentially apocalyptic as the European religious wars of the sixteenth and seventeenth centuries. It was, of course, the turmoil of these wars that led to the triumph of *secular science*. The schism, however, completed the fissioning of the old Moral Philosophy—the total of all the sciences of mind and society (Schumpeter 1949; 141)—into sociology, political science, psychology, and what can be called market economics. This further contributed to economics losing its original sense of culture and becoming an abstract discipline that assumes itself unaffected by culture, and disembodies the volitional behaviour of labour into a shadow of homogeneous units. (Boulding 1972; 267)

The Benthamite Legacy

Following Bentham, each generation of mainstream economists struggled for release from utilitarian inhibition. John Stuart Mill tried to modify Benthamite confidence in the calculus of happiness by, among other things, commenting, "better Socrates dissatisfied than a fool satisfied" to express different orders of pleasure and the importance of qualitative as well as quantitative factors in economic analysis (Barber 1967; 94–95). He also highlighted the cultural factors contributing to the subjection of women (Mill 1869). Similarly, Marshall attempted a reconciliation of the Benthamite calculus of happiness with the English historical school and its insistence on the cultural and historical context of economic behaviour (Blaug 1968; 305).

Keynes, like Mill and Marshall before him, thought that he and his generation had finally thrown off restrictive Protestant hedonism and escaped the Benthamite tradition (Innis 1951; 79–80):

I do now regard that as the worm which has been gnawing at the insides of modern civilization and is responsible for its present moral decay. We used to regard the Christians as the enemy, because they appeared as the representatives of tradition, convention and hocus-pocus. In truth, it was the Benthamite calculus, based on an over-evaluation of the economic criterion, which was destroying the quality of the popular Ideal. Moreover, it was this escape from Bentham, . . . which has served to protect the whole lot of us from the final *reductio ad absurdum* of Benthamism known as Marxism. (Keynes 1949; 96–97)

In spite of Keynes' hope, as well as his involvement with Bloomsbury and his role in establishing the Arts Council of Great Britain (Keynes 1975), the impact of Bentham continues. Perhaps this too reflects fear of revolution, fear of Marx's revolution come true in Russia. It places limits on what phenomena are considered legitimate subjects of economic investigation. It continues to blind mainstream economists to the cultural context of economic behaviour. Daniel Bell, quoting the author of the most widely-read economics textbook in the history of the world, observed:

Paul Samuelson has noted that many economists would "separate economics from sociology on the basis of rational or irrational behavior, where these terms are defined in the penumbra of utility theory." Utility is defined as egoism, or self-interest, and rationality is defined as consistency—that is, preferences are transitive . . .

Yet the crucial question is whether the obverse of the rational is the irrational rather than the non-rational, and whether or not non-rational motivations can provide a valid assumption for an understanding of economic behavior, i.e. to behavior which seeks to enhance the wealth and welfare of mankind. (Bell 1981; 70–72)

Put another way, can non-rational motivations provide the foundation of an inclusive or *catholic* economics to balance the materialistic, protestant, exclusionary rationality of contemporary economics? In this regard, Tibor Scitovsky (1972, 1976, 1989) has gone further than anyone in re-tooling economics to account for "irrational" behaviour, e.g., in cultural activities including the arts. Where Bentham used the associationist psychology of his day to define pleasure and pain as the ultimate principles of behaviour, Scitovsky, after investigating contemporary clinical psychology, substitutes "comfort and stimulus." But the Scitovsky model still uses marginal utility. On the one hand, he argues that the similarity between productive and cultural activities explains why the economist's failure to include culture explicitly in the model of human behaviour has not detracted from its usefulness. On the other, he notes the ultimate obstacle to greater artistic creation is the Puritan ethic (Scitovsky 1989). He does not accept that a Benthamite cultural bias has become part of the analytic mechanism itself.

To escape Western cultural bias implicit in utility theory, one can envisage a *mythic economics* based on the depth psychology of Carl Jung (Jung 1964), or a *multicultural economics* that explicitly allows for the effect of culture, custom and tradition on economic behaviour.

Institutional Economics

But not all schools of Western economics lost sight of the role of culture, custom and tradition. Rooted in the German Historical School of the late eighteenth and early nineteenth centuries (Schumpeter 1949; 807–24), one school maintains the linkage—Institutional Economics. This school includes the American economists Thorstein Veblen, John R. Commons (Commons

1934), W.C. Mitchell, and Clarence Ayres, as well as the European economists Max Weber, Sydney and Beatrice Webb, Selig Perlman, and especially Joseph Schumpeter, whose work stressed the influence of class, technological change, and institutional setting on economic behaviour. (Schumpeter 1942, 1949)

Like the mainstream, Institutionalists consider the competitive marketplace the most efficient and effective institution ever devised for economic production and consumption. However, they also recognize the trade union as a legitimate political institution functioning in the economic arena (Commons 1909); the impact of culture, custom and tradition (Veblen 1899); and the effect of law on the nature and form of economic behaviour (Commons 1926).

Legal and cultural relativism is also part of the legacy of the Canadian economist Harold Innis, particularly in his work on the economic impact of communications technologies (Innis 1950, 1951). He recognized that all scholarship must be grounded in analysis of the radical particularities of time and place, history, and geography (Carey 1981: 79). Through his study of communications media, Innis identified a fundamental relationship between culture and communications. A culture is extensive in time (i.e., it has duration) to the extent that its dominant communications medium is durable, e.g. stone, clay, or parchment. Alternatively, a culture is extensive in space if its dominant communications medium is easily transported, e.g., papyrus and paper. Using this hypothesis, Innis tried to explain the rise and fall of empires through history.

One of Innis' colleagues, Marshall McLuhan, took his relativism first to "the medium is the message," and then to human consciousness altered by the emergence of new electronic communications media (McLuhan 1978). Elsewhere I have noted the unique nature of contemporary communications media (Chartrand 1987a). In many ways, however, Innis is the Father of the Information Economy (Porat 1977). He was the first to recognize communications media as an economic staple in the post-modern economy.

Thus Institutionalism is characterized by *cultural, historical, and legal relativism, inductive method, and general systems analysis*. On the other hand, mainstream economics is characterized by *positivism, deductive method, and mechanistic systems analysis*. In essence, two questions separate Institutionalists from the mainstream. First, can economic behaviour be reduced simply to quantitative expression? Second, even if in theory this can be done, do we possess, or will we ever possess, the necessary technology of measurement? I think not, in part because "even in the physical sciences, a new notion of quality now emerges at the thermodynamic level—a quality which is irreducible to quantity." (Jantsch 1975: 95)

Cultural Economics versus the Economics of Culture

There is at least one continuing debate between Institutionalists and mainstream economics, which takes the guise of *Cultural Economics versus the Economics of Culture* (Seaman 1981). *Cultural Economics* can be defined as *the study of*

the evolutionary influence of cultural differences on economic thought and behaviour. Cultural Economics assumes that economic behaviour varies according to cultural context. The seminal and leading exponent of transdisciplinary, relativistic cultural economics is Kenneth Boulding (Boulding 1972; 1973; 1985; 1986).

The *Economics of Culture*, on the other hand, can be defined as *the study of the allocation of scarce resources within the cultural sector.* It assumes that objective laws apply to economic behaviour regardless of cultural differences. It places emphasis on the scientific nature of economics and the application of abstract mathematical techniques. The seminal and leading exponent of the positivist economics of culture is William Baumol (Baumol, Bowen 1966; Baumol 1977; 1984; 1987; Baumol, Baumol 1984). Between the two is Scitovsky (Scitovsky 1972, 1976, 1989) who, on the one hand, insightfully and explicitly recognizes the impact of culture and, on the other, is attempting to re-tool Benthamite analysis. All three are required for a complete understanding of economic phenomena, if for no other reason than that all three form part of the contemporary economic ethos. But we still must await, it appears, for the emergence of a truly *Humane Science* to replace the integration of thought embodied in pre-Benthamite *Moral Philosophy*.

EMPIRIC

While Institutional Economics maintains a link between cultural context and economic behaviour, it also plays a critical ongoing role in the development of empirical evidence. To Institutionalists, empirical statistical evidence is necessary but not sufficient for economic analysis. Development of the modern System of National Accounts will demonstrate the role of the Institutionalists. (Chartrand 1988).

While the concept of national income accounting goes back at least to the seventeenth century, it was not until 1944 that discussions between the United States, the United Kingdom, and Canada resulted in adoption of the essential rules and framework for what is now called the System of National Accounts (Raynault 1967). These discussions emerged partially in response to extensive statistical development conducted in the United States by members of the Institutional School of Economics, particularly the work of the National Bureau of Economic Research established by W.C. Mitchell, as well as Schumpeter's extensive statistical work on business cycles. These collections of statistical evidence were used in conjunction with the macroeconomic model of national income and expenditure developed by Keynes. From this marriage of two distinct economic traditions, the System of National Accounts emerged in 1947 when the United Nations proposed international standards for creation of the SNA and its associated sub-sets such as the Standard Industrial Classification. (Chartrand 1988).

In contrast to the simple Benthamite assumption that economic behaviour can be measured, Institutionalists have spent much time and effort extending the technology of measurement. As noted by Scherer (Scherer 1971; 7), mainstream economists tend to accept available data and subject it to extensive manipulation in order to approximate theoretic concepts rather than taking the time and effort to build up data sets.

In a sense, *the technology of measurement*, at any point in time, is a cultural artifact that may not be adequate for testing theoretical propositions. Unlike physics, where theory and measurement go hand-in-hand, in the social sciences theory is not directly related to measurement. In fact, much of existing theory is speculation that goes far beyond the available technology. It stands or falls not on measurement but on believability (Sen 1973). In future, with the advent of "Point-of-Sale" computer systems, universal product codes, and Arbitron ratings (*The Economist* April 22, 1989; 63-66), it may be possible to test empirically basic premises of the economic theory of consumption, including marginal utility. Serious questions, however, will arise concerning governmental and academic access to such private commercial data files. At present, however, data requirements for testing far exceed the technology of measurement.

To provide an empirical picture of cultural economics, I shall draw on the extensive data bases developed at the Canada Council over the last ten years. These data bases are, in the most part, published in an annual publication entitled *Selected Arts Research Statistics* (Research & Evaluation 1988). In fact, development of these data bases was conducted using an Institutional approach—first you develop the data, then the theory.

Unfortunately, it is becoming increasingly difficult to maintain existing data sets or develop new ones. To some extent, this decline in the technology of measurement reflects the pricing implications of the emerging Information Economy (Chartrand 1989). Contrary to a popular misconception, the Information Economy does not imply a Golden Age of free-flowing information (Naimark 6 May, 1988). Rather, it involves a reification of the economic value of information, i.e., *monetization of information*. The implications for mainstream economic thought, which assumes that economic behaviour takes place in an environment of perfect information, cannot be underestimated.

Consumption

Using National Accounts, consumption of cultural goods and services is most closely measured by Personal Expenditure on Education and Culture, which includes all out-of-pocket spending on cultural activities and private education. It excludes about \$2 billion in government subsidies to producing organizations. Between 1976 and 1986, PEEC grew from \$5 billion constant 1981 dollars to \$6.6 billion. In constant dollars per capita it grew from \$216 to \$261. As a percent of Gross Domestic Product, it represented approximately 1.6 percent

throughout the period. PEEC was unaffected by recessions of the late seventies and early eighties. (Research & Evaluation 1988; Table 1).

There are four demographic factors, however, that dramatically affect cultural consumption, particularly consumption of "high culture" products (Chartrand 1987b). First, the city provides the necessary threshold and concentration of population required to support an integrated network of cultural facilities, pools of artistic talent, and a rich spectrum of audiences. These facilities, talent, and audiences are spread out across the country in a hierarchy of regional and national centres of excellence, which collectively constitute national civilization. As the level of urbanization increases, so does the level of arts-related activities. Second, education is the best indicator of arts participation. In 1961, 11% of adults had some post-secondary education or more. In 1985, some 33% had attained this level. By the year 2000, nearly 40% of adults will have some post-secondary education or more (Research & Evaluation 1988; Table 4). Third, women are disproportionately represented in the arts audience (60% / 40%). Traditionally, they have been the "carriers of culture" in North America. As the participation of women in the labour force and political system grows, so will their demand for more cultural as opposed to recreational or sports activities. Fourth, while it is generally recognized that the "baby boom" is turning into the "geriatrics boom," it is not generally known that the older one gets (at least to official retirement age), the more likely one is to participate in arts activities. (McCaughey 1984).

Rapid urbanization, rising levels of education, increasing economic and political participation of women and aging of the population are fueling a market shift towards higher quality goods and services including arts and cultural activities, in the so-called "Yuppie" marketplace. The impact of these variables is visible in projected rates of participation in different leisure activities. Between 1985 and 1990, it is projected that the adult population will grow at 1.1% a year. Attendance at live theatre is forecast to grow at 1.5% per year, library use by 1.6%, and attendance at galleries and museums by 2.0%. By contrast, attendance at sports events is projected to grow at 0.7% per year over the period. (Research & Evaluation 1988; Table 5).

Production

UNESCO has been concerned for more than twenty years with development of a method for the collection of statistical evidence concerning cultural activities. During this period, UNESCO has developed a framework for cultural statistics that identifies eleven statistical categories. *Cultural Heritage, Printed Matter and Literature, Music, Performing Arts, Visual Arts, Cinema and Photography, Radio and Television, Socio-cultural Activities, Sports and Games, Nature and the Environment, and General Administration of Culture and Non-apportionable Activities*. A statistical profile of culture, in the UNESCO sense, includes everything from art to funeral rites. (Chartrand March 1988).

Consideration in this paper can be given only to the arts industry. There are

four distinct parts of the industry—the amateur, commercial, fine, and applied arts. Production in the amateur arts is motivated by “self-actualization” or “self-realization” including realization of cultural heritage. Production in the commercial arts is motivated by the pursuit of *profit*. In the fine arts, production is motivated by the search for “art-for-art’s-sake.” In many ways the fine arts are the R&D sector of the industry. Finally, production in the applied arts, including the crafts, is motivated by the *addition of aesthetic value to function*, e.g., the aesthetic design of an automobile or a coffee pot.

There is only limited statistical evidence available concerning the amateur and the applied arts. However, the commercial and fine arts can be defined statistically as the arts industry to include: advertising, broadcasting, motion pictures, the performing arts, publishing, recordings, and the visual arts. (In the statistical estimate, sectors such as designer clothing and jewellery are excluded, even though artistic design plays an important role.) Between 1977 and 1985, arts industry revenue grew from \$6.9 billion to \$8.7 billion, measured on constant 1981 dollars. Compared to all twenty-two major manufacturing industries recognized by Statistics Canada, arts industry revenues increased from tenth to ninth largest. Salaries and wages grew from sixth largest to third largest over the period. (Research & Evaluation 1988; Table 7).

Within the arts industry in 1985, publishing accounted for 49% of all revenues; broadcasting 31%, motion pictures 12%; recordings 4%, and advertising (using the last available Statistics Canada survey of 1977) only 2%. The performing arts accounted for over 1% while the visual arts accounted for just 1% of industry revenue using available data sets. Production of “canned” cultural products such as books, films, records, and television programs has traditionally been dominated by foreign, generally American firms; the live arts, including the performing and visual arts, by domestic producers (Department of Communications 1987). This situation is changing with the internationalization of the American cultural enterprise. (New York Times, 16 April, 1989; Section 3–1).

The distribution of industry activity between the provinces was dramatically skewed towards Ontario, which accounted for 46% of all activity; Quebec had 24%; British Columbia 10%; and Alberta almost 8%. In total, the Atlantic provinces accounted for 5.7% of industrial activity, Manitoba 3.4%, and Saskatchewan 2.4%. (Research & Evaluation 1989).

The impact of urbanization is visible from the relative concentration of population and industrial activity. Toronto accounts for approximately 12% of the population but 33% of all arts industry activity. In the case of Montreal, the corresponding figures are 12% and 21%; for Vancouver 5% and 8%. (Research & Evaluation 1989).

Employment

Employment data do not permit distinction between the fine arts and the commercial arts. Furthermore, arts-related workers cross back and forth.

Accordingly, total arts-related employment will be reported. There are two distinct arts-related employment populations. Together they included 414,000 workers or 4% of the Canadian labour force in 1981 (Research & Evaluation 1988; Tables 11-23). In fact, arts-related employment was as large as the agricultural labour force or federal government employment including crown corporations.

The first group is the arts labour force, workers who use arts-related skills in day-to-day jobs such as artists and arts technicians, including curators, librarians, and camerapersons. Using 1971 definitions, between 1971 and 1981 the arts labour force increased 74% from 156,455 to 272,640 or 2.3% of the Canadian labour force which, as a whole increased 39%. Recently, the first output from the 1986 Census of Canada has become available (Statistics Canada 1988). Between 1981 and 1986, the arts labour force increased 14% compared to a 6% increase in the total Canadian labour force. By 1986, the arts labour force included 311,610 workers, or 2.4% of the total labour force.

The second group is the arts industry labour force, made up of workers employed in arts industries such as advertising, publishing, motion pictures, live staged events, fine arts schools, libraries, etc. Only 35% of the arts labour force was employed in the arts industry in 1981. The rest of the arts labour force worked in all other parts of the economy, e.g., as product designers employed in manufacturing industries and window designers employed in the retail trade industries. Thus arts labour force occupations are similar to scientific and technical professions in that arts-related skills are used throughout the economy, not just in the arts industry. Relevant 1986 Census information concerning the arts industry is not currently available. On a comparative 1971 Census basis, between 1971 and 1981 the arts industry labour force increased 58% from 150,080 to 236,610. The arts industry labour force was 2% of the total Canadian labour force. Of this total, 52% were men. Compared to all manufacturing industries, the arts industry was the largest employer with over 234,000 employees.

In the airline industry, large numbers of ground personnel are required to keep an airplane flying. Similarly in the arts industry, large numbers of technical and administrative personnel are required to keep artists on stage, in front of the camera, in print, or in galleries. In fact, artists make up only 24% of the arts industry labour force, other arts-related occupations such as librarians, camerapersons, and projectionists 18%, arts administrators 8%, and support personnel 50%.

Public Support

The most reliable data concerning public sector cultural expenditures is the *Canadian System of Government Financial Management Statistics* (CSGFMS). It is used to determine equalization payments under the Fiscal Arrangements Act. The system reports the broader category of culture rather than the arts. Culture in the CSGFMS includes zoos and botanical gardens as well as the literary, media,

performing, and visual arts. Furthermore, it excludes public broadcasting, including the CBC and provincial broadcast authorities. (Research & Evaluation 1989; Table 24).

Between 1975-76 and 1984-85 (the last year for which complete data is available) tri-level support to culture increased from \$891 million in constant 1981 dollars to \$1.2 billion in 1984-85. As a percentage of gross general government spending, culture remained at 0.6% throughout the period. Spending per capita, however, increased from \$39.20 in constant 1981 dollars to \$47.90 in 1984-85. The federal share of tri-level cultural expenditure declined over the period from 33% to 28%, the provincial share grew from 32% to 36%, and local support remained at roughly 36%.

Using the annual federal estimates and Public Accounts, between 1977-78 and 1988-89, federal gross expenditure on culture (including the CBC) increased from \$1.2 billion in constant 1981 dollars to \$1.4 billion in 1988-89. The CBC's share declined from more than 70% to less than 63%. Telefilm's share over the period increased from 0.4% to 5.6%. The now defunct National Museums Corporation's share increased from 6.5% to 7.2%, while the National Library increased its share from 1.9% to 2.4% and the National Archives from 2.6% to 3.6%. The Canada Council's share remained roughly 5.5%, while the National Arts Centre declined from 2% to 1.7%, and the National Film Board's share declined from 5.9% to 3.8%. (Research & Evaluation 1988; Table 25).

With respect to federal spending, there has been as a significant shift of support from "cultural" producers such as the CBC, National Arts Centre, National Film Board, and Canada Council towards "commercial" producers and heritage institutions and activities. This shift represents a change in direction from a socially-oriented cultural policy of "democratization and decentralization" pursued in the 1960s and 1970s towards an industrial policy of "commercial viability" in the 1980s, with attendant implications for the cultural content of production.

THEORETIC

Through time, the means by which we earn the income to consume, invest and pay taxes has come from a changing set of factors of production including capital, labour, and technology (Chartrand 1989). In each period of economic thought—Pre-Classical, Classical, Neo-Classical and Keynesian—a different factor has been considered dominant in economic growth. (Table 1).

At present, however, no school of thought enjoys general public confidence. This lack of consensus is similar to that in architecture where the certainties of the Internationalist school have been displaced by an eclecticism of design known as Post-Modernism. By analogy, we have entered the period of Post-Modern Economics (Chartrand 1987b). Various proposals put forward in recent years suggest that new factors of production have emerged as the dominant source of

TABLE 1 Evolution of National Income

National Income (Y)	Sector	Theorists	Expression	Role of art and science
Y = (K) where K = Capital in the form of gold, silver and land conquered from other nations Spain 17th century	Primary Industry Farming Fishing Mining	Pre-Classical English Pamphleteers Touquet	Monetarists and Gold Standard advocates who believe in the primary role of the money supply	Symbol
Y = (K, L) where K = specialized industrial machinery and L = division of labour England early 19th century	Secondary or Manufacturing Industry Manufacturing	Classical Smith Ricardo Malthus J. Mill Marx	Marketeters who believe only manufactured goods are a source of national wealth and Marxists who believe only labour is productive of economic surplus	Unproductive
Y = (K, L, T) where T = disembodied or systemic technology change, e.g. steam power and electricity and perfectly competitive markets for K & L USA late 19th & early 20th centuries	Tertiary or Service Industries Communications Financial Services Transportation	Neo-Classical J.S. Mill Marshall	Neo-conservatives who believe government must set business free and de-regulate the marketplace	Productive
Y = (K, L, T, g) where T = embodied technological change operating in an environment of large corporations and trade unions making perfect markets impossible and where g = Government required to fine tune aggregate demand, adjust for social costs of externalities like pollution and support research & development. OECD in mid-20th?	Public Sector Government	Keynesian Keynes	Liberals and social democrats who believe Government, not the marketplace, is the primary institution of societal progress	Merit Good
Y = (K, L, T, O, Dig) where T = epistemologic technology change resulting from research in the physical sciences and where O = Organizational Technology resulting from social science research and where D = Design Technology resulting from research in the arts. Japan late 20th century?	Quaternary Industries Patents Trademarks Industrial Design Copyright Know-How	Post-Modern Bell Chartrand Intis Liebenstein McLuhan Porat Toffler Valaskakis	State of the Art (T) Excellence (O) Elegance (D)	Source

economic growth. Such new factors generally emerge through re-definition of older concepts such as capital and technological change. In the case of capital, revisionism includes human capital, information, or knowledge capital (Porat 1977) and cultural capital (Wriston 1985).

There are two reasons why re-definition of technological change is more appropriate. First, the traditional political schism between left and right would be accentuated through expansion of the definition of capital and glorification of the capitalist entrepreneur. Similarly, the schism would be widened by attributing to a mythic *working class* responsibility for all economic growth and development (Perlman 1929).

Second, in this century, technological change has become recognized as the most important source of economic growth. Understanding of such change, however, is limited (Bell 1981; 80). We do not understand why some things are invented and others are not; why some things that are invented are developed and brought to market, and others are not. In fact, technological change represents a *measure of our ignorance*. The importance of an improved understanding of technological change is apparent from the fact that less than one-third of the growth rate of National Income per worker since the turn of the century is attributable to the rise in capital per worker, while more than two-thirds is attributable to that catchall term, technological change (Shapiro 1970; 493).

The word *technology* is, in fact, derived from the Greek *tekhne* meaning art and *logos* meaning reason, and so is *reasoned art*. Since the so-called Neo-classical period of economic thought, when technological change was first seen as a factor of production, the concept has evolved. At that time, technological change was considered "disembodied" or systemic, involving e.g., general improvements in communications and transportation. After World War II, during the so-called Keynesian period, the concept changed to "embodied" technological change, i.e., specific bits of scientific knowledge embodied in specific products such as the transistor in the transistor radio (Chartrand 1989).

Epistemologic Technology Change

We have now entered an era of what can be called *epistemologic* technology change (Chartrand 1989), i.e., technological change resulting from research in separate and distinct fields of knowledge. There are, in my opinion, three epistemologic sources of technological change. First, research in the physical sciences leads to change in physical technology (T), the most obvious form of technological change. The phrase generally used to express the best in contemporary physical technology is *State-of-the-Art*.

Research in the social sciences and the humanities results in improved organizational technology, i.e., in the ways and means to organize and motivate capital, labour, and physical technology (O). The search for the best in organizational technology is known as the *Search for Excellence*. It is estimated

that poor motivation of workers and managers annually costs the United States between 20 to 40% of gross national product (Liebenstein 1981). Similarly, it is generally agreed that the success of the Japanese economy is attributable not to superior physical science research, but rather to superior organizational and design technology. The inability of Canadian managers to develop effectively new products and processes is an example of poor organizational technology (Economic Council 1985).

Just as the physical sciences are the source of physical technology and the social and management sciences the source of organizational technology, the arts are the source of design technology (D). Research in the arts, however, does not generally take place in the university. Rather, it emerges from the professional non-profit fine arts where *art-for-art's-sake* is the dominant motivation (Chartrand, 1987b).

Unlike its place in science, the university's role in professional training and development in art is relatively small and historically recent, except for music (Robinson 1982; 134). With the exception of music and literature (rhetoric and grammar), art was not part of the ancient or medieval liberal arts curriculum (Cantor 1969; 66-67). It was only in the Renaissance that the fine art academy emerged as a formal centre for visual art education (vom Busch 1987, 3). In theatre and dance, there were no formal training institutions in the English-speaking world until the late nineteenth and early twentieth centuries (Robinson 1982; 178-9: 191-2). The traditional independent status of the music conservatory is also evidence of the separate institutional pattern of learning pursued in art and science.

Both organizational and design technology are, a priori, more sensitive to culture, custom and tradition than physical technology. This may explain why there has been little investigation of these factors by mainstream economics.

The contribution of design to the marketplace is "Elegance," a term also used in mathematics, the physical sciences, and economics. It expresses Occam's Razor, a guiding principle of the scientific method: *the fewest assumptions for the maximum explanation*. "Elegance" can also be defined as "ingeniously simple and effective" (Sykes 1985; 311) or "more or less." This last catches the sense of economy as frugality.

Aesthetic design is fundamentally different from the technical or functional design seen in a more efficient automobile engine. Its impact on consumer behaviour involves what has been called "the best looking thing that works." (Cwi 1985) If a consumer does not like the way a product looks, he or she may not even try it.

Emergence of Design Technology in the Nineteenth Century

The importance of Art and Design to international economic competitiveness was first recognized in the English-speaking world over 150 years ago in the United Kingdom with the establishment of the first school of design in 1836, only four years after Bentham's death. Until 1814, the *Statute of Artificers* had

regulated training and employment of artisans in the craft guild tradition. In that year, responding to deregulation or laissez-faire economic and Benthamite social policies, parliament abolished the Statute. In short order, the guild system collapsed and the labour market became flooded with unskilled workers. By 1835 the quality of British production, particularly textiles, had declined to the point where the British Board of Trade appointed a Select Committee to investigate the problem and recommend remedies. The Committee called for the direct application of art in manufacturing in order to maintain competitiveness with European rivals. The result was creation of schools of design (Savage 1985).

Similarly, in 1870, the Commonwealth of Massachusetts became the first American state to make art education a requirement in the public schools, with passage of the Drawing Act. The Act originated through pressure from Boston manufacturers, who argued that because European students were trained in design and drawing, American manufacturers suffered a competitive disadvantage (Freedman 1985; 21). Within two decades, the same argument served to introduce art education in Canadian schools (Chalmers 1985). During this period, the most eminent of contemporary economists, Alfred Marshall, explicitly recognized the importance of Art to economic life, even if he questioned the moral result of art education.

Education in art stands on a somewhat different footing from education in hard thinking: for while the latter nearly always strengthens the character, the former not infrequently fails to do this. Nevertheless the development of the artistic faculties of the people is in itself an aim of the very highest importance, and is becoming a chief factor of industrial efficiency . . . Increasingly wealth is enabling people to buy things of all kinds to suit the fancy, with but a secondary regard to their powers of wearing; so that in all kinds of clothing and furniture it is every day more true that it is the pattern which sells the things. (Marshall 1920; 177-8)

Eclipse during the 1930s

Since the Great Depression of the 1930s, however, the economic importance of design, and therefore the contribution of the arts and crafts to national income, was, in effect, forgotten. This amnesia resulted partially from the pedagogic triumph of the Pestolozzian tradition in art education, which aimed to develop creativity and expression, and displaced the economic rationale in the 1930s (Betenas 1985). The success of what is essentially an upper-class concept of arts education reflected the triumph of the Arts for Art's Sake Movement which, beginning in the mid-nineteenth century withdrew the arts from the dehumanizing impact of the industrial Revolution (Henderson 1984; 46). It also reflected the dis-ease on the part of political and economic philosophers concerning the arts since the time of Plato:

we must remain firm in our conviction that hymns to the gods and praise of famous men

are the only poetry which ought to be admitted into our State. For if you go beyond this and allow the honeyed muse to enter, either in epic or lyric verse, not law and the reason of mankind, which by common consent have ever been deemed best, but pleasure and pain will be the rulers in our State. (Plato 1952)

Beyond the irony deriving from Bentham's having presented pleasure and pain as the logical ruler of the state, the eclipse of design technology in the 1930s also reflects a more general short-sightedness on the part of economists and other social scientists concerning the nature and implications of the Industrial Revolution. The Revolution not only transformed economic production (which is the central focus of mainstream economics), it also transformed consumption-molding phenomena such as advertising, consumer research, the department store, fashion, marketing, and the mail-order catalogue, phenomena which are critical to the modern economy (McCracken 1988). The hesitation of mainstream economics to deal with questions of consumer taste and "non-rational" issues such as advertising reflects the lingering impact of the Benthamite tradition, a tradition that must play a declining role in an increasingly multicultural domestic and world economy.

Re-Emergence in the 1980s

This lack of study has resulted in little empirical evidence concerning the impact of art on economic competitiveness. But while the impact of improved design has not been quantified, its impact on competitiveness is again being recognized.

Today, the importance of design in international competitiveness can be seen in the United States and Canada where higher quality consumer products tend to come from abroad, particularly from Europe. Why? Given that capital plant and equipment in North America is as good as that in Europe, the answer is not superior European production technology. In fact, it results from a combination of factors including retention of craft traditions (*The Economist*, 4 March, 1989; 64) such as apprenticeship systems and feedback between skilled consumption and production. As noted by Tibor Scitovsky in his path-breaking book, *The Joyless Economy*, North American consumers "seem willing to pay a high price, in terms of money, for the reputation of European imports, that is we pay cash to obtain high quality without having to pay for it in terms of careful shopping" (Scitovsky 1976; 176).

When the design advantage of European producers, and increasingly that of Japanese producers, is combined with the wage advantage of offshore or Third World producers, then the North American producer is left with a narrowing mid-range market. This combination of design and wage disadvantages may explain the apparent de-industrialization of North America. Improved productivity through robotics and other new technologies may lower costs of production, but only improved design will secure for North American producers a

share of the growing up-scale consumer market (*Business Week*, 21 November, 1983; 2 July, 1984).

Partially in the light of the continuing trade deficits with the Japanese and Europeans, the importance of enhanced design is becoming apparent to some major North American corporations, including SCM, Teledyne, Black and Decker, and J.C. Penney (Skolnick 1985: 46). But from where do these design skills come? They come from the arts, as was recognized by the MacDonald Royal Commission:

There is, then, another aspect to culture, namely good taste, good design and creative innovation, that should enable smaller industrial economies to compete effectively in the world economy In this endeavour, higher quality implies an organic relationship between business and engineering, on the one hand, and design and craftsmanship on the other High quality products, technologies, plants, homes, cities and locales require the long-run presence of creative artists of all kinds. To increase the long-run supply of artists . . . governments must support the artists and the arts. The long-term return from investment in artists and the arts is real and substantial. In the absence of strong public support of this sector, Canada will not reap these benefits. Governments at all levels should increase their contribution to their respective arts councils (Royal Commission 1985: Vol. II, 115-6).

Beyond product design, design technology also plays a crucial role in contemporary advertising. It is generally forgotten that within the ecology of capitalist realism, advertising is the lubricant of the market economy. And advertising, to a great extent, is the application of the literary, media, performing and visual arts to sell goods and services. Actors, dancers, singers, musicians, graphic artists, copywriters, and editors are employed to sell everything from fruit to nuts; from cars to computers, from beer to toilet paper. Traditionally, mainstream economics has viewed advertising (with the exception of pure information) as unproductive because it manipulates consumer wants through non-rational techniques. Such manipulation supposedly reduces consumer sovereignty.

Design technology is also playing an increasingly significant role in consumer research. Many researchers have begun to question the dominance of the information processing model in consumer research. This model essentially views consumer behaviour as a question of a consumer with a problem searching for information concerning the best product or service to solve his or her problem. This model, however, is increasingly seen as neglecting important consumption phenomena such as playful leisure activities, sensory pleasures, daydreams, aesthetic enjoyment, and emotional responses (Holbrook, Hirschman 1982; Holbrook 1987).

To the extent that fantasy and aesthetics are playing an increasingly important role in contemporary consumer behaviour, then to that extent a mythic

economy has emerged. This economy involves what traditionally have been considered irrational motivations. Fantasy, in motivating consumers to buy Jaguars, BMWs and Rolls-Royces for status and other subjective reasons, not simply for transportation, is becoming more important to an economic understanding of what the consumer is actually maximizing in an increasingly multicultural domestic and international economy.

The Quaternary Sector

Advances in physical, organizational and design technology are legally protected by intellectual property rights legislation including *patents* emerging from the physical sciences; *registered industrial design* emerging from research in the physical sciences and the arts; trademarks emerging from the arts, and *copyright* emerging from research in the physical and social sciences, humanities and the arts. Managerial and industrial *know-how* also falls into this category of abstract goods and services. To some extent, one can also include heritage and natural beauty as possessing similar abstract properties, which become realized in the marketplace through tourism. Art, heritage, and natural beauty are particularly rich sources of information, the market for which will expand significantly in the future (McHale 1978).

Intellectual property rights serve as the legal foundation for the industrial organization of the arts and sciences (Commons 1926). But legal systems are the product of specific cultures. For example, in French-speaking and most Western European countries, *droits d'auteur* (author's rights) are the core of what in English-speaking countries is called copyright. Such rights are rooted in the Republican revolution of the late eighteenth century, and the Rights of Man movement. In the communist Bloc (none of whose members are signators to international copyright conventions), the situation is similar yet different. While moral rights of the creator are recognized through one-time awards, all subsequent rights revert to the state.

Moral rights are not, however, the historical root of copyright in the English-speaking world. Rather, in the fifteenth century, with the introduction of the printing press, Tudor monarchs began to grant to approved printers the right to copy approved works, i.e., copyright. Thus, the roots of copyright are censorship and feudal grants of commercial privilege (MacDonald 1971: 14-16). These residuals of feudal and crown law did not vanish with the advent of democracy. On the contrary, they survived in attenuated form to plague democratic law and government. Obsolete in practice, they still influence the spirit of the law (Gray 1981: 108). In English-speaking countries copyright and industrial design are the legal foundation of industrial organization of the arts.

Furthermore, the concept of native copyright, while not yet incorporated into statute, is based on yet another tradition. Specifically, among native peoples, the rights to a cultural work such as a song, story, or icon do not belong to an individual but rather to the tribe, or to one individual in each generation, generally through matrilinear inheritance.

If culture is the transmission of knowledge, then the power of the State can be measured by its ability to enforce the integrity of such transmissions. This links duration and mobility of a medium, highlighted by Innis, and enforcement of intellectual property rights to the content and integrity of transmissions through time and space (Chartrand 1987b).

At any point in time, however, there exists a stock of capital and labour that embodies current and past technical and educational attainment. Advances in physical, organizational, and design technologies are flows that become embodied in new products, industrial processes, and equipment, organizational methods, styles, and fashions. Creative workers who "invent", the laws protecting their inventions; and firms relying on such rights for industrial organization, are all subject to culture, custom, and tradition.

In dollar terms, research, both scientific and artistic, involves a tiny amount of resources compared to the existing capital stock and labour force. However, its role in economic growth is that of a catalyst stimulating changes and improvements in the quality and efficiency of capital and labour (Shapiro 1970: 490-1). The Information Economy is based on the buying, selling, and licensing of the abstract intellectual property rights that result from advances in physical, organizational, and design technologies (Chartrand 1987c). Intellectual properties were a major issue during the Canada / U.S. Free Trade Negotiations as well as central in current negotiations concerning the General Agreement on Tariffs and Trade. Custom and tradition also serve, in their own right, as major non-tariff barriers, e.g., in Japan.

At present such abstract goods and services constitute a *Quaternary* or *Fourth Sector* of the economy. The empirical importance of abstract goods and services is difficult to demonstrate. Existing technology of measurement is extremely poor. That the System of National Accounts does not adequately cover even the Tertiary or Service Sector has serious implications for policy-making. In a society in which "if you aren't counted, you don't count," a sector for which statistical information is scarce receives little attention from decision-makers. In the case of Quaternary or abstract goods and services, the data problem is even worse. In the most general terms, their importance can be illustrated by using *invisible exports*, which, in the United States, minimized the impact of enormous price increases in petroleum imports during the 1970s and 1980s (Ginzberg, Vojta 1981). The value of *invisible or abstract goods and services* to societal decision-making is rising, e.g., long-term environmental costs are beginning to displace short-term economic gains in the social calculus.

A SUMMING UP

An unanswered question in intellectual history is why economics has become an abstract discipline almost void of any cultural context. Early in the nineteenth century, Jeremy Bentham began to strip economics of its concern with culture, custom, and tradition. Bentham's assumption that culture was

irrelevant was reinforced in mid-century when the schism developed between Marxist and mainstream economics. Cultural relativity became Marxist analysis and mainstream economists adopted an increasingly positivist approach.

Because of the Benthamite legacy, the arts and culture have been thought intangibles and frills in a bottom-line economy. But a fundamental demographic revolution, involving rapid urbanization, rising levels of education, increasing participation of women, and the aging of the population, has made the arts and culture a significant industry and a major force in national competitiveness.

Evolution of art from symbol to source of wealth parallels evolution of the concept of national income. Through time, there has been a progressive expansion in the sources of national income. In this century, technological change is recognized as the most important. However, the nature of technological change has also changed. Today, there are three sources of technological change. Research in the physical sciences leads to improvements in physical technology. Research in the social sciences and humanities leads to improvements in organizational technology, i.e., in ways to organize and motivate capital, labour, and technology. Research in the arts leads to improvements in advertising, consumer research, marketing, and product design. Physical and social science research is centred in the university; research in the arts in the professional fine arts.

Research involves a small amount of resources compared to the existing capital stock and labour force. However, research is a catalyst stimulating changes and improvements in the quality and efficiency of capital and labour. Research results are embodied in abstract intellectual property rights including copyright, patents, registered industrial design, and trademarks. The buying, selling, and licensing of such rights constitute the quaternary sector of the post-modern economy.

In this new economy, creative workers—artists and scientists—are the source of growth in national income. They, the laws protecting their creations, and firms relying on such rights for industrial organization are sensitive to culture, custom, and tradition—as is the increasingly educated and sophisticated consumer. The Benthamite tradition deeming culture irrelevant to economic behaviour is no longer valid in a mythic or multicultural domestic and international economy. There are other examples where the growing divergence between the economic theory of value and evolving social reality is becoming apparent, e.g., the environment. But we still await emergence of a truly *Humane Science* to take the place of pre-Benthamite *Moral Philosophy*.

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A Moving Target: Federal Film Policy within a Global Culture†

Great art is sustained and strengthened by great patronage. Poor patronage discourages and diminishes art. (M. Straight, *Twigs for the Eagle's Nest: Government and the Arts*, 1979.)

We can perhaps assume that the use of a medium of communication over a long period will to some extent determine the character of knowledge to be communicated and suggest that its pervasive influence will eventually create a civilization in which life and flexibility will become exceedingly difficult to maintain and that the advantages of a new medium will become such as to lead to the emergence of a new civilization. (H.A. Innis, *Bias of Communications*, 1951)

THE PROBLEM of film policy in Canada can be addressed from three overlapping positions. The first concerns some of the stories that narrate the development of film in this country. The second relates these stories to more conceptual developments that have taken place in the western world, and considers the effect of these developments on a country that was still in its political and cultural infancy. The third examines our emerging national culture as it has been affected by technology—both the opportunities lost and the possibilities that might remain. These three are considered below under the headings, "The Canadian Film Context," "The European Conceptual Past," and "The Global Technological Future."

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† Presented at the symposium, "The State and the Arts," Université Laval, 5 June, 1989. While the title of this presentation was suggested by John Meisel, the Chair of the symposium, the concept of film policy as a moving target is to be found in Keith Acheson and Christopher Maule, *Trade Policy Responses to New Technology in the Film and Television Industry*, Working Paper Series, Department of Economics, Carleton University (Jan., 1989), p. 2.

While my main brief is film, as I move from the past into the future, I shall increasingly, inevitably, also be discussing television. For a global delivery system, film has become dependent upon television. As a medium of popular entertainment, film has been replaced by television. Within contemporary communications mythology, film is to television as Abel was to Cain. As an art form—as a beautiful medium for serious personal expression—film has been killed by television.

THE CANADIAN FILM CONTEXT

While the basic historical data have been energetically presented in a variety of texts,¹ and while even I have whisked through this territory a couple of times before,² let me begin, nevertheless, with a short rehearsal of some of the more telling anecdotes that comprise the history of filmmaking in this country.

Since 1899, when James Freer, a Manitoba farmer, first showed his films on prairie life in London, England, under the aegis of the Canadian Pacific Railway, filmmaking in Canada has rarely been seen as an activity valuable in itself but as a medium of communication useful for performing extra-filmic tasks. Following the success of Freer's films, the CPR commissioned other short film subjects (and this time, from British and American production companies)—again, not for their own sake but for their use as strategic vehicles to promote immigration.

There were some attempts to produce feature films in Canada in the first three decades of this century; however, since Canada is so close to the United States and since Hollywood films are, apparently, so popular, as early as the 1930s, film distribution and exhibition fell into the hands of American-controlled distribution and exhibition companies and indigenous Canadian fiction feature production was systematically discouraged. There continued to be, however, small government bureaux, making informational films for educational purposes. These different bureaux were all consolidated by the Film Act of 1939, which resulted in the founding of the National Film Board of Canada, with the evangelical John Grierson as National Film Commissioner. At the outbreak of

1 A basic bibliography of Canadian film would include the following: Léo Bonneville, ed., *Le cinéma québécois, par ce qui le font* (Montréal: Éditions Paulines, 1979); Seth Feldman, ed., *Take Two: A Tribute to Film in Canada* (Toronto: Irwin, 1984); Seth Feldman and Joyce Nelson, eds., *Canadian Film Reader* (Toronto: Peter Martin Associates, 1977); Douglas Fetherling, ed., *Documents in Canadian Film* (Peterborough: Broadview Press, 1988); Peter Harcourt, *Movies and Mythologies* (Toronto: Canadian Broadcasting Corporation, 1977); Michel Houle and Alain Julien, *Dictionnaire du cinéma québécois* (Montréal: Fides, 1978); Peter Morris, *Embattled Shadows: A History of Canadian Cinema, 1895-1939* (Montreal: McGill-Queen's University Press, 1978); Peter Morris, *The Film Companion* (Toronto: Irwin, 1984); and Pierre Véronneau and Piers Handling, eds., *Self-Portrait: Essays on the Canadian and Quebec Cinemas* (Ottawa: Canadian Film Institute, 1980).

2 For instance, at the biannual conference of the Association of Cultural Economics, held in Ottawa at the Canada Council, 30 Sept., 1988; published in Harry Hillman Chartrand, Clair McCaughey, and William S. Hendon, eds., *Cultural Economics: A Canadian Perspective* (Akron: Association for Cultural Economics, 1989), pp. 79-86.

World War II, the extra-filmic purpose of the film board was clear: its major task, unquestionably, was to mobilize the patriotic sentiments of Canadians and to help the Allied Forces win the war. The war-time series—"Canada Carries On" and "The World in Action"—were enormously successful, receiving extensive screenings in Canadian theatres. Indeed, some of the "World in Action" films even played in theatres in the United States.

At the end of the war, however, this increased sense of ourselves as Canadians—as a nation able to project images made by ourselves onto our own screens—was soon to be taken away. With no discernible extra-filmic purpose, with Grierson himself still highly mistrustful of allowing Canadians to get involved with fiction filmmaking,³ production floundered as no cultural film policy had ever been devised.

Furthermore, after the war, when the government was threatening to put a freeze on American entertainment assets in Canada—assets which might have been used to design an indigenous Canadian film industry—the government of C.D. Howe and Lester Pearson compromised with the Motion Picture Association of America and accepted what has been called the Canadian Co-Operation Project. Under this arrangement, Canadians agreed not to set up a rival industry to their Hollywood neighbour and, in return, Hollywood promised both to produce more of their films in Canada and to make references to Canada in selected American movies in a way that might be beneficial to the Canadian tourist industry.

Nowadays, we think of this agreement as a scandal.⁴ Yet even without it, Hollywood had always thought this way about Canada. In 1936, in the musical, *Rose Marie*, we had seen Nelson Eddie, dressed up as a Mountie in the Rockies, singing songs to Jeanette MacDonald; and then in 1955, in the western, *The Far Country*, we got to see Jimmy Stewart in Montana, pretending to be in the Yukon, making meaningless references to Canadian birds. If our first little films that were made at the beginning of this century had been designed specifically to attract immigrants, now Hollywood films containing favourable references to Canadian geography were being made supposedly to attract tourists!⁵

In spite of the absence of federal cultural initiatives, however, in the early 1960s, some feature films were made—some of them even by the National Film Board.

These scattered individual initiatives encouraged the federal government to act. In 1968, it created the Canadian Film Development Corporation. Initially granted a lump sum of ten million dollars, this corporation was designed to encourage and promote the production of fully indigenous Canadian feature

3 See Joyce Nelson, *The Colonized Eye* (Toronto: Between the Lines Press, 1988), pp. 80–84.

4 See Pierre Berton, *Hollywood's Canada: The Americanization of Our National Image* (Toronto: McClelland and Stewart, 1975).

5 At this point, I should at least mention the founding of the Canada Council in the 1950s. If the Council has never had sufficient funds to give more than minuscule help to Canadian feature filmmakers, nevertheless, it is the Canada Council that has kept, and still keeps, the concept of the art of film alive.

films. And so it did. But since it did nothing either about distribution or exhibition, most of the films made (say) between 1968 and 1977—films like *Goin' Down the Road* (1970) or *Mon Oncle Antoine* (1971)—although acclaimed by many critics, had very limited exposure in Canadian theatres and virtually none abroad. These films from the 1960s and early 1970s constitute what I have called our “invisible” cinema. The films exist; they are distinguished; they are unmistakably Canadian, both in their locations and their attitudes. But they were seen by very few people, either in Canada or around the world.

In 1974, in an effort to attract investment funds from the private sector, a law was passed allowing a 100 percent tax write-off for private investment in Canadian feature films. As a result, in 1975 there was a small boom in feature film production, and by 1977, when Michael McCabe was appointed chairman of the Canadian Film Development Corporation, the whole tone of film production had changed. With the new tax incentives, one-time real-estate brokers, now turned film producers, began mobilizing private funds, packaging deals, and putting together projects designed for the mass-market, North American audience. People were no longer talking about making distinctively Canadian films: the object now was to gain access to the highly profitable North American entertainment industry. They now talked about making deals!

Hype was the name of the game. As new players entered the field, budgets quadrupled and a lot of money changed hands. But very little of this money found its way into quality products on the screen. The few good films that did come out of this period—films like *Atlantic City* (1981) and *Quest for Fire* (1981)—although very successful commercially, were scarcely Canadian in any cultural sense of the word. And many other films were made that never left the shelf, before Pay TV had to dredge them up in the middle of the night to meet its Canadian content requirement. This period of speculative investment in the late 1970s and early 1980s led to what I have called our “unwatchable” cinema.

The story continues—leading to what appears to be increasingly inept policy and to pusillanimous supervision of the implementation of that policy. But as research is increasingly making clearer, such policies as were being put in practice were so full of contradictions that they were virtually impossible to supervise.⁶ Furthermore, as the country moved closer and closer towards a free-trade agreement with the United States, all the efforts initiated by the Department of Communications towards making the film industry in this country more economically self-sustaining had to be vitiated and they then withered away.

The more political aspects of these problems are dealt with by my colleague, Ted Magder, in a companion paper.⁷ I shall now invoke a wider dimension to this discussion of film policy, moving from “close-up” to “long-shot,” so to

6 Keith Acheson and Christopher Maule, “The Carrot and the Stick: A Review of Canadian Broadcasting Policy,” *Cinema Canada*, 155 Sept., 1988, pp. 17–19.

7 See below, pp. 205–20.

speak, because all these industrial battles and "little Canadian" cultural struggles have a context far vaster than that within which they were apparently taking place. In part, this wider context stretches back in time, at least to the Enlightenment; and in part, also, towards the future—towards a future that will be dominated by a complex series of ever-developing, electronic, digitalized technologies.

THE EUROPEAN CONCEPTUAL PAST

Within the post-modernist context of contemporary cultural thinking, a playful debate is waged these days concerning the precise moment when the "pasted" splintering of the post-modern world began. If we are really learned, we might trace it back as far as the relativist phenomenology of Heraclitus, the Greek philosopher (circa 500 B.C.) or at least as far back as the beginnings of written language. It is the development of written language, as Marshall McLuhan (amongst others) has assured us, that made the continuity of tribal memory increasingly irrelevant and that altered our sensorium bit by bit by favouring the sense of the eye over the sense of the ear.⁸ More about this later. Now, however, I should like to look back as far as the Enlightenment to see what had already happened culturally by then.

Many contemporary scholars, from the German philosopher Jürgen Habermas to the cultural economist Harry Hillman-Chartrand,⁹ have described the basic technological changes that have come to form the modern world. In a most helpful paper initially delivered at Frankfurt in 1980, Jürgen Habermas delineates the splitting up of cultural and conceptual practices that characterizes the modern world. He names the Enlightenment as a critical historical moment. Initially citing Max Weber, Habermas describes cultural modernity as

the separation of the substantive reason expressed in religion and metaphysics into three autonomous spheres. They are science, morality, and art. These came to be differentiated because the unified world-views of religion and metaphysics fell apart. Since the 18th century, the problems inherited from these older world-views could be arranged so as to fall under specific aspects of validity: truth, normative rightness, authenticity and beauty. They could then be handled as questions of knowledge, or of justice and morality, or of taste. Scientific discourse, theories of morality, jurisprudence, and the production and criticism of art could in turn be institutionalized. Each domain of culture could be made to correspond to cultural professions in which problems could be dealt with as the concern of special experts. . . . With cultural rationalization of this sort, the threat increases that the life-world, whose traditional substance has already been devalued; will become more and more impoverished.¹⁰

⁸ Marshall McLuhan, *The Gutenberg Galaxy* (Toronto: University of Toronto Press, 1962).

⁹ See Harry Hillman Chartrand, "Introduction," in W.S. Hendon, H.H. Chartrand, and H. Horowitz, eds., *Paying for the Arts* (Akron: Association for Cultural Economics, 1987), pp. 3–14.

¹⁰ "Modernity—An Incomplete Project," in Hal Foster, ed., *The Anti-Aesthetic: Essays on Postmodern Culture* (Washington: Bay Press, 1983), p. 9. (Published initially as "Modernity versus Postmodernity, *New German Critique*, 22 [Winter 1981].)

Habermas goes on to explain that "the differentiation of science, morality and art has come to mean the autonomy of the segments treated by the specialist and their separation from the hermeneutics of everyday communications" (p. 9). Nowadays, in our post-industrial, electronic world communication within cultural life has been fragmented far beyond what was imaginable in the pre-literate societies of the past in which, as Harry Chartrand has put it,

[c]ause and effect are not distinguishable. It is through the unchanging enactment of ritual that the desired results are achieved. Science and art are one. How to make something and the thing made are mystically unified. Process and product are identical. To name a thing is to magically control it.¹¹

Today, however, we live in a society in which the right hand knoweth not what the left hand doeth. Furthermore, the brain that operates the right hand might have been programmed in such a way that it has little in common with the brain that operates the left hand. One brain might belong to an artist; the other to a politician. In this country especially, that would undoubtedly mean that they would have nothing in common whatsoever—whichever official language they might speak!

Given the divided institutionalization of knowledge outlined by Habermas, it is no wonder that, throughout the world, consensual policy decisions have become so difficult to arrive at, and that professional politicians have seemed to understand so imperfectly the life-enhancing importance of culture. At the same time, it is equally no wonder that, as this fragmentation increases, academic philosophers are re-discovering "axiology" as an aspect of their practice that requires recuperation, and that forward-thinking economists are turning their skills towards an examination of culture.

Since Nietzsche announced the death of god over a century ago, and since, in recent years, all sense of civic morality seems to have vanished from public life, all that is left as a common good in our social world is the celebration of capital and its increased accumulation—to what ultimate end I have never been able to understand. But I do know that, insistently, more and more of what we read in the press and see on TV is about money—about money for its own sake, about the power of possessing money and about the apparent economic benefits to be found in money changing hands.

Advertisements, once so offensive to so many,¹² now seem merely decorative within articles or television programs dedicated to the financial wars waged between mighty tycoons or to the latest, most-fantastic-ever corporate take-over. In the United States, even the business community is beginning to get anxious about the growing mergers of advertising agencies that then place "profits over creativity."¹³ The only value that seems universally shared to-

11 Chartrand, "Introduction," p. 4.

12 See H.A. Innis, "The Strategy of Culture (1952), reprinted in Eli Mandel, ed., *Context of Canadian Criticism* (Toronto: University of Toronto Press, 1971).

13 "Mediums and Messages," *MacLeans*, 29 May, 1989, p. 42.

day—even by the major communist countries—is the value of the marketplace. The marketplace with its profit motive has replaced a sense of honour and public duty as the star to guide us by. Mammon has replaced morality.

Perhaps it is partly from a sense of guilt that economists are now attempting a rethinking of more-than-merely-economic matters, especially in relation to over-all cultural activities and to funding of the arts. Generally addressing more what John Meisel has called "aesthetic" culture rather than "leisure" culture,¹⁴ cultural economists nevertheless are now analyzing what they call the "cost disease" in relation to the funding of the arts;¹⁵ and they now make elaborate arguments for the acceptance of the arts as "merit goods"—that is, as an aspect of culture that is indeed life-enhancing and which is, therefore, worthy of funding, whether it be profitable or not.¹⁶ As Professor J. Pen from the University of Groningen has put it: "As economists, we have for a long time believed in the accumulation of capital. It is time that we recognize the enormous possibilities for creating human, cultural capital."¹⁷

These comments may seem to have strayed a long way from Canada and from the struggle to forge a film policy within this country. But not so. To begin with, to return to my title, we might want to argue that, finally, it is perhaps less its film policy than Canada itself that has been the "moving target" throughout these years. If, as I have argued, the origins of the modernist project can most easily be located in the eighteenth century, within the divisive rationalities of the Enlightenment, what happens in a country that, although still part of the so-called developed nations, virtually missed out on the Enlightenment and on much of the eighteenth century? As Northrop Frye has written:

Canada had no enlightenment, and very little eighteenth century. The British and the French spent the eighteenth century in Canada battering down each other's forts, and Canada went directly from the Baroque expansion of the seventeenth century to the Romantic expansion of the nineteenth.¹⁸

While the Americans were busy firming up their rights of man and developing philosopher-poets like Whitman, Emerson, and Thoreau, who would help define a new sense of identity for a new republic within a new world, Canadians were busy fighting amongst themselves about the rights of their respective pasts—the French against the English, the centre against the regions—just as we are now! While the rationalities of the Enlightenment were shattering the

14 John Meisel, "Political Culture and the Politics of Culture," *Canadian Journal of Political Science / Revue canadienne de science politique*, VII (Dec. 1974), p. 602.

15 Hilda Baumol and William J. Baumol, "The Mass Media and the Cost Disease," in W.S. Hendon, N.K. Grant, and D.V. Shaw, eds., *The Economics of Cultural Industries* (Akron: Association for Cultural Economics, 1984), pp. 109–23.

16 J. Pen, "A Very Cultural Economist's Ideas about the Locus of Decision-Making," in W.S. Hendon and J.L. Shanahan, *Economics of Cultural Decisions* (Cambridge: Abt Books, 1983), pp. 16–30.

17 *Ibid.*, p. 28.

18 Northrop Frye, "Conclusion," in *Divisions on a Ground: Essays on Canadian Culture* (Toronto: Anansi, 1982), p. 77.

epistemological certainties that had held together the Western world since the time of the Greeks, the peoples of Canada were involved in a series of little internecine squabbles, battling for terrain and for a modicum of economic gain. Even today one might argue that Canadians are a people who define themselves in terms of a series of fictitious regional imaginaries—again: the French against the English, the regions against the centre, the women against the men, the north and its native peoples—quite understandably—against us all.

The upshot of all of this, however, is that, as a nation, we have always been highly vulnerable to the pull of external ideologies apparently more stable than our own and have only on rare occasions felt united in a common national purpose. (With the international exchange of hockey players for monetary reasons, even winning the Stanley Cup cannot really unite us as a nation any more!) Furthermore, if in the old days we could take a certain pride in the visible technologies of the railway, the canal, and the trans-Canada highway, as our systems of communication became increasingly electronic, they became increasingly invisible. As a student at Carleton has written: "The arrival of the railway in a town could have hardly gone unnoticed, but who notices a few more wires or can see satellite transmissions let alone attribute social change to them."¹⁹

THE GLOBAL TECHNOLOGICAL FUTURE

Canada has always been a test case for the concept of nationality. It has never had much of a "natural" reason for existing—certainly not geographically, demonstrably not economically. And yet it has. But if the economics of the film business—an international industry controlled by American capital—has permitted Canadian cinema to function only on the margins even of its own filmic culture, then the economics of a thoroughly digitalized global information system may soon not allow Canada to exist at all.

Speaking more generally of the arts than of film, one might argue that the federal government has shifted its cultural policies over the years. Professor Jiri Zuzanek of the University of Waterloo said in 1986:

According to a document published in the mid-1970s by the Department of the Secretary of State (then a Canadian equivalent of the Ministry of Culture), three phases can be detected in Canadian governmental policies with respect to the arts. The first phase, beginning in the 1920s, was characterized by an emphasis on "national unity and national identity." The second phase, beginning in the early 1950s, emphasized "cultural excellence." During this phase, energies were directed primarily to bringing Canadian cultural standards of achievement up to the prevailing international level of excellence. The third phase, beginning in the mid-1960s, was characterized by growing attention to the goal of "democratization."²⁰

¹⁹ Harold Hines, "Transborder Data Flow and Canadian Culture," unpublished paper written for the Institute of Canadian Studies, Carleton University, 1989.

²⁰ Jiri Zuzanek, "Democratization of Culture and Cultural Democracy in Canada," in *Paying for the Arts*, pp. 115–21.

I should like to suggest that now we have passed into a fourth phase, which recapitulates the second phase's concern about standards of international excellence, but less for reasons of national pride than for reasons of international merchandising. Now with the new electronic technologies upon us, however, with the technologies of fibre optics and the micro-chip, of the personal computer, Direct Satellite Broadcasting, and, more recently, of Transborder Data Flow, plus a potentially imperialist monster known as Integrated Services Digital Network (ISDN), how will any country, let alone Canada, be able to assert sovereignty over either style or ownership in the international exchange of information?—by which word we must now include, of course, not only raw data but also television and even film. Evidently, ISDN is so organized that it can replace "all analog transmissions of data with digital systems (e.g., fax systems) to make the global exchange of information virtually instantaneous."²¹ And uncontrollable, I might add.

Think back to an earlier survey on the needs of Canadian broadcasting, written in 1977.

Against the mosaic of regions and languages and cultures, against the inequalities of the economy, communication has a special importance in Canadian life. Without the roads and the railways, without the airlines, the centrifugal forces of the Canadian environment are difficult to keep in balance. Without national broadcasting services in both French and English, the full character of the country, its regions and particularities could not be expressed to the community as a whole. Perhaps the main responsibility of Canadian broadcasting is to create for Canadians the shared experience of living together in the second largest country of the world.²²

That was the old dream, involving the struggle that has been lost. Throughout the world, now, these new electronic technologies are whittling away the once precious notions concerning the individuality of self and of national sovereignty. I recall an early, apparently looney formulation by Marshall McLuhan:

Canada was created by rail only a hundred years ago, and owes everything to the railway—the joining of French and English Canada together was a railway action. Rail is a profoundly centralizing power. Now with the airplane and television and radio, Canada is coming to an end.²³

On reflection, perhaps this comment is not that looney! In Europe nowadays, when policy-makers speak about the erosion of their individual, indigenous television systems, they refer to the "Canadianization" of their culture. Like the Balkans in the past, Canada has acquired international significance through its

21 Hines, "Transborder Data Flow."

22 E.S. Hallman with H. Hindley, *Broadcasting in Canada: Case Studies on Broadcasting Systems* (1977), cited in Robert E. Babe, *Canadian Television Broadcasting: Structure, Performance and Regulation* (Hull: DSS, 1979), p. 6.

23 Marshall McLuhan, "Television in a New Light," in S.T. Donner, ed., *The Meaning of Commercial Television* (Austin: University of Texas Press, 1977), p. 87.

failure to achieve constructive cultural policies, especially in the field of the "leisure" culture of film and television. As Mark Starowicz of the CBC recently said: "Canadianization" has become "a term, in European broadcasting circles, synonymous with fragmentation and loss of national identity on the airwaves."²⁴ Canada has been named as the site of cultural failure!

As I am supposed to be talking about film, I shall not go into Starowicz's analysis concerning privatization and importation within the Canadian broadcasting system, for these ills have been with us in film since *Back to God's Country* in 1919. Nor can I fully share Starowicz's faith that there is still possibly an exclusively Canadian solution to these now inescapably global problems concerning the digitalized exchange of cultural information.

My conclusions are nothing if not tentative and interrogative. Before my colleague Harry Chartrand got me bogged down in the Sargasso Sea of cultural economics, I had planned to develop further some notions concerning the ways in which our puritanical inheritance has tilted against any collective celebration in a shared project of visual representations. After all, images are beautiful and beauty creates desire; and that is not the sort of thing we talked about in Sunday School back in the formative days of a distinctively Canadian culture in the 1950s! Did our collective puritanism militate against a legislated creation of a culture of joyfully moving images?

I also wanted to develop further some McLuhanesque notions concerning technologies of the eye and technologies of the ear.²⁵ Apart from the obvious economic reasons, was there some hidden, again puritanical reason, why Canadian mandarins took radio seriously but never film? And why, when we moved into television, the new set of mandarins privileged news and information services, which are primarily aural in their appeal, over drama and film specials that could be more visual?

Furthermore, in this country that historically values peace, order, and good government, were not the visual and the dramatic elements of our culture neglected because they are not only potentially more beautiful but they are also, semantically, more unstable? They invite a more individual hermeneutics. Perhaps for a country that has never valued film for its own sake, this semantic instability, this genuine freedom of choice, is what has been disallowed?

Finally—leaving these crucial questions unanswered until another time—I was planning to end this paper on a note of science fiction. If the gods of the marketplace are so demanding that in order to go on selling and buying and selling and buying we have to leap over national boundaries and ignore, if not eradicate, many of the finer distinctions of national culture, then it seems to me that we—what do I call us?—the "disinherited"?—have to unite and go global

²⁴ Mark Starowicz, "Citizens of Video-America: What Happened to Canadian Television in the Satellite Age," unpublished paper presented at the Symposium on Television, Entertainment and National Culture: The Canada-U.S. Dilemma in a Broader Perspective, sponsored by Duke University and Université Laval, Quebec City, April 1989, p. 2.

²⁵ For instance, see Marshall McLuhan, "The Eye and the Ear and the Hemispheres of the Brain," *Futures Canada: Bulletin of The Canadian Association of Future Studies*, 2 (1978), p. 2.

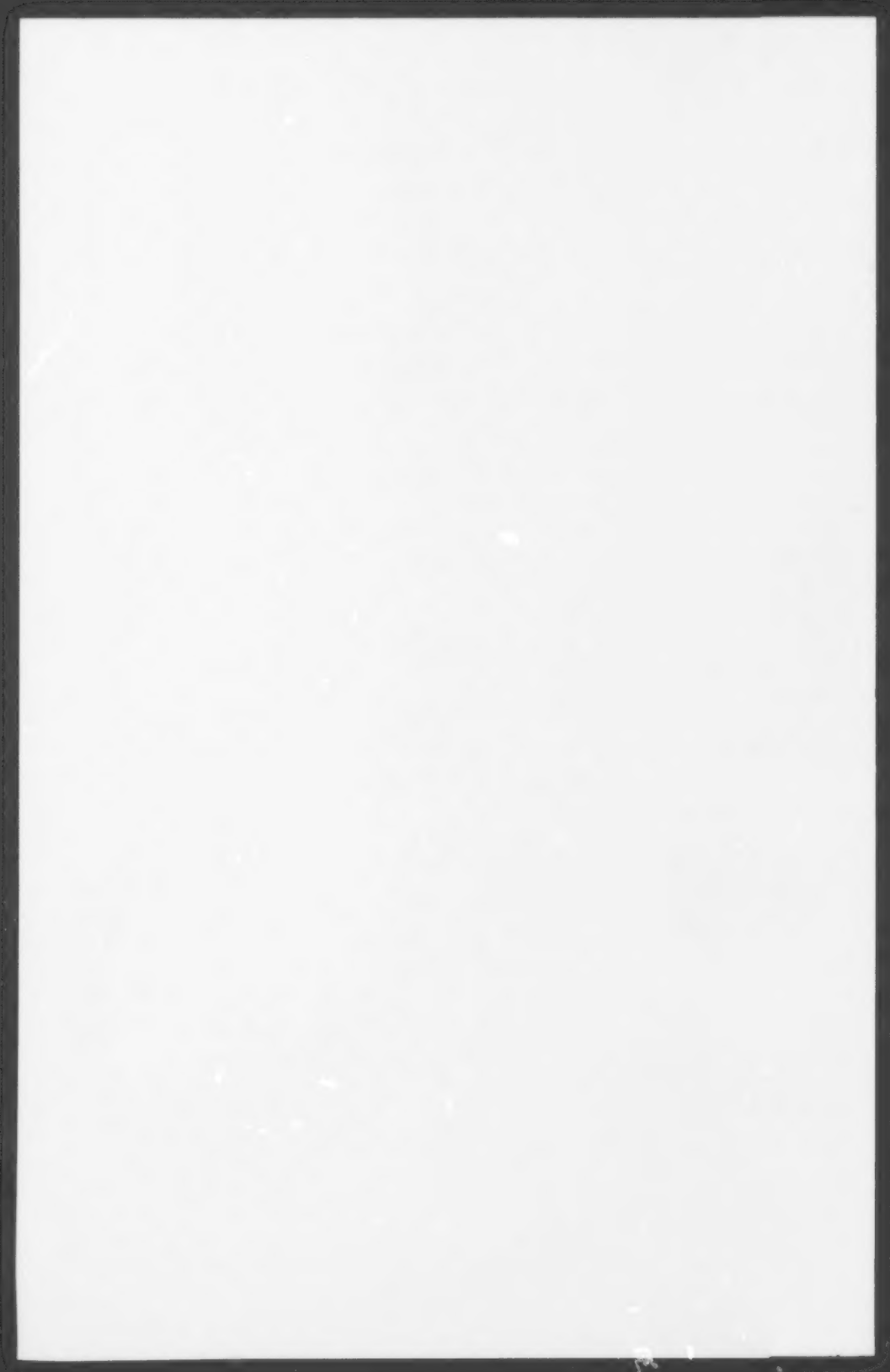
as well. My scenario was to recommend the founding, no longer of a group called Friends of Canadian Broadcasting (that would be too tiny), but of a world-wide group called Friends of Alternative Broadcasting.

Ideally, this group would consist not just of the intelligentsia—a funny word, in Canada—but of all sorts of potential viewers with minority interests, whether within “aesthetic” culture or “leisure” culture. So supporters of PBS and TVOntario; subscribers to *Harper's* magazine”; players of darts and fish-fly enthusiasts; philatelists and numismatists; and old-fashioned nationalists who nostalgically want to see on their film and television screens pictures of their own countries and hear sounds of their own speech—all these funny people around the world might unite into a global organization that involved Channel Four Television in England, Channel Two in Germany, Ina in France and RAI in Italy, so that we might hire space on one of Rupert Murdoch's satellites or work out some kind of deal with Silvio Berlusconi in order to negotiate the exchange of cultural signals in some way. Perhaps even before too long we might be able to launch our own independent, low-tech satellite, as private radio-buffs are beginning to do.

I thought of this as science fiction. Except that Bernard Ostry, chairman and chief executive officer of TVOntario, in a recent address to public broadcasters in the United States, presented somewhat the same idea. “The future of public broadcasting,” he declared, “is an international issue, calling for international agreements and institutions.”²⁶ It must go global, he explains.

Good luck, say I! Yet I am also enthusiastic. The television marketplace must become our new corporate sponsor, paying for our good art. The medium of digitalized electronic exchanges is in the throes of creating a new civilization. And yet, if any part of my own science fiction scenario or of Mr. Ostry's urgings can possibly come true, then we might, through this shared system of international exchange, re-discover, perhaps even re-invent, the individualized, nationally informed, art of cinema.

26 “Ostry urges public broadcaster to ‘go global,’” *Cinema Canada*, 162 (April-May 1989), p. 5. For an apparent transcript of the text, see Bernard Ostry, “Can culture survive the broadcast battles?”, *Globe and Mail*, 5 June, 1989, p. A7.



Striving for Excellence: Mass / Elite Tensions in Cultural Policy[†]

THE OTHER PAPERS in this symposium were prepared by colleagues who have given years to research and meditation in their fields. We have had reflections of a professional kind, expressed in professional language. I am an amateur, neither a scholar nor an expert in any cultural field, with neither training nor skill in any line of research. My reflections are of a more scattered kind, born of a life-long attachment to the arts, and nursed by my experience of the performing kind at the National Arts Centre many years ago.

I shall deal with the subject proposed to me by our chairman in two parts. First, I mean to astonish you by arguing that there are no reasons whatever for mass / elite tensions in the cultural field, if governments behave. Second, I mean to demonstrate that our governments have not behaved in recent years, and that the tensions that should concern us are government / elite tensions. I shall try to explain this state of affairs, and conclude by suggesting that the Royal Society of Canada might do something about it.

ON THERE BEING NO REASONS FOR MASS / ELITE TENSIONS IN THE CULTURAL FIELD

In a recent issue of the *New York Review of Books* I came across this comment on Alexis de Tocqueville by Robert Paxton of Columbia University: "[He] was, both by family tradition and by political logic, a social pedagogue of paternalist leanings who wanted to reproduce within the coming democratic society the civic and artistic excellence heretofore nurtured by aristocratic society."¹ From

* Chairman, Canadian Mediterranean Institute, formerly Director General, National Arts Centre.

[†] Presented to the symposium, "The State and the Arts," Université Laval, 5 June, 1989.

¹ Robert O. Paxton, "The Divided Liberal," *NYR*, 2 Mar., 1989.

the age of Pericles until our own, Western society has lived with the mass / elite dichotomy to which Paxton refers, though as you will see I would rather speak of symbiosis than dichotomy, and I hope to explain away all idea of tension in this context.

In an attempt to interpret this dichotomy or symbiosis in Canadian cultural terms, I shall start with some reflections on the needs and desires of the mass and of the cultural elite in Canada, in so far as they are distinguishable. In tackling the subject I shall draw mainly on my experience with the performing arts.

I begin by asking whether, and if so how, our cultural elite can be distinguished from the mass of the rest of us.

O! for a Muse of fire, that would ascend
The brightest heaven of invention!²

To kindle that ascending fire I propose to rub together the two sticks John Meisel handed me, "mass" and "elite," and see what happens.

Let me describe these two sticks *grosso modo*, and first the older one, "mass." This term, which has been with us for a long time, has been dismissed by J.B.S. Hardman as "an elastic epithet devoid of any precise scientific content . . . more likely to reveal the point of view of the person using it than to clarify the phenomena in question."³ Hardman suggests that eighteenth-century aristocrats used the word "mass" with contempt, in the sense of *hoi polloi*, canaille, or rabble; while nineteenth-century humanitarians referred more patronizingly to the "suffering" masses, educators to the "eager" masses, and so on. Today, it seems to me, the epithet "mass" is quite elastic enough to include the whole of our society. To a greater or lesser extent each one of us belongs to the rabble nowadays. I hope this does not come as news to the Royal Society.

The other term, "elite," according to the *Oxford English Dictionary*, is quite a new expression, at least in the meaning it generally conveys today. For our purpose let us disregard the priestly castes, aristocracies and ruling classes whose sway ended with World War I. As Suzanne Keller has pointed out, in today's mass society no one group exercises, as was once the case, all the key social functions.⁴ Instead, we see a variety of specialized elites, no longer justified by blood or wealth but rather by merit and / or particular skills.

Thus we now have, in Canada and other Western countries, a rather volatile political elite, which is supposed to set our collective goals; we have the rather steadier business, military and scientific elites, which are meant to help us achieve those goals; we have a moral elite composed of philosophers and historians who maintain some sort of social cohesion among us by reminding us of whence we came and whither we are bound on our journey. And then we

² *King Henry V*, Chorus, l. 1.

³ *Encyclopedia of Social Sciences* (1933), Vol. X, p. 195.

⁴ *International Encyclopedia of Social Sciences* (1968), Vol. V, p. 26.

have a cultural elite, the one that concerns me here, consisting of those creative and interpretive artists, poets, musicians, painters and writers, who at certain moments bring us together at the highest possible emotional level . . .

Dissolve [us] into ecstasies,
And bring all Heav'n before [our] eyes⁵

. . . and in those moments make us realize that our journey is indeed worth making.

I suggest that to an important extent, perhaps not as yet clearly recognized, the members of all these elites enjoy the symbiotic⁶ relationship with the rest of humanity explained by St. Paul to the Romans: "For as we have many members in one body, and all members have not the same office: so we being many are one body . . . and every one members one of another."⁷ Clearly, all elites share with the mass many of the same needs and desires. We have the primal needs of food and drink, clothing, and lodging, to begin with. After these are met we all desire, as human beings with something of the divine spark within us, a sense of our own worth, the respect of others for that worth. That same spark gives each of us an even higher sense, the sense of excellence, not necessarily within ourselves, and a desire, however dim and confused, to follow where that sense leads. A striving for excellence is surely part of our human condition, along with the occasional joy of attaining it, or at least sharing its attainment by others, as we do in reading poetry, or listening to music.

So we all share the most significant needs and desires of a cultural kind. Caught up in them, admittedly, are certain demands that appear to set the elites apart from the mass. But I hope to make it clear that these demands need not be, at least not here in Canada in our essentially kindly society, a source of tension in the long run. Indeed, the demands of our cultural elite today—and perhaps this has always and everywhere been the case in the long run—serve the needs of the mass tomorrow. But for the purpose of my present discussion let us assume that at any moment in the history of any society elites, including a cultural elite, exist. Further, that these elites have requirements apparently divergent from, though in my view ultimately reconcilable with, the requirements of the mass of that society.

What these special requirements may be emerges clearly from the definitions of culture offered fifteen years ago by John Meisel, in his "Political Culture and the Politics of Culture"⁸ where he discriminated between "aesthetic" and "leisure" culture, or "high" and "low" culture. By aesthetic culture he meant "the training and refinement of mind, tastes and manners," according to the

5 *Il Penseroso*, l. 65.

6 Symbiosis "association of two different organisms . . . which live attached to each other, or one as a tenant of the other, and contribute to each other's support" (*OED*).

7 Epistle to the Romans, 12: 4-5.

8 *Canadian Journal of Political Science*, VII (December 1974).

Oxford English Dictionary, or, as our own Massey Commission put it, "the development of the intelligence through the arts, letters and sciences."⁹ In this culture we read Milton and listen to Glenn Gould at the piano. This is elite culture. Leisure culture, Professor Meisel suggested, is something rather less intellectual, more active and participatory. It concerns things that are enjoyed by people and that need not necessarily "elevate" them, such as comic strips, rock music, graffiti and the like. This is mass culture.

To the extent that I read comic strips with enjoyment, as I do, have felt the spell of the Beatles, and am struck by graffiti, however *canaille*, I live my role as a member of the mass. But insofar as I am moved by *Samson Agonistes*, and hear the Goldberg Variations with more pleasure than the Rolling Stones, I am under the spell of an aesthetic elite. I would argue that my case is not exceptional, that *all* Canadians are, or could be, beneficiaries of that evident symbiosis, at once of the mass, massy, yet grateful subjects of a gifted elite, Massey with a capital M and an e, and so elitists. We spend most of our time living cosily "en masse," if not with Marcel, but occasionally many of us are—and I believe all of us could be—swept up to a higher level of being, however briefly, by an artistic experience.

Let me look at that sort of experience rather closely, as we see it in the field of the performing arts. We shall soon find that our cultural elite, comprising our creative and performing artists, does indeed have certain demands to make, rather expensive ones, that go well beyond the as-yet-unfelt and therefore as-yet-unexpressed needs of the mass of our fellow Canadians. I shall here become autobiographical. In 1964, on being appointed to coordinate the planning of the National Arts Centre, I found myself under the guidance of Maurice Lamontagne, then Secretary of State, a remarkable man, our first Minister of Culture and, in my view, our best to date. Hardly had I set to work than he told me to go to Europe and see how things were done there. He did not tell me to visit the States (though I did later on) and I soon knew why.

European theatres, opera houses and concert halls, I found, had been designed, largely in the eighteenth and nineteenth centuries, to meet the fastidious tastes of the aristocratic class then dominant. Their American counterparts, I learned later, had been designed to accommodate the larger, more democratic crowds seeking entertainment in the twentieth century. The practical differences in the two designs were very noticeable, and the European struck me immediately as very much the better. The European stages were larger than the American, their seating capacities smaller, their foyers more spacious, and there was often a fine restaurant on the premises. European artists therefore had better performing conditions, European audiences could hear, see and enjoy their performances better. For all these reasons an evening in a European theatre was more enjoyable and rewarding.

This was my first lesson in elitism à la Tocqueville. In recommending

⁹Report of the Royal Commission on National Development in the Arts, Letters and Sciences (Ottawa, 1951), p. 7.

European rather than American theatre dimensions for our National Arts Centre (much to the disgust, by the way, of the New York impresario Sol Hurok, who wanted another O'Keefe Centre in Ottawa), I was animated by Tocqueville's desire to reproduce for the benefit of a democratic society the civic and artistic excellence formerly nurtured by an aristocratic one. The theatrical standards set by the Venetian oligarchy in the eighteenth century seemed to me absolutely right for visitors to Ottawa in the twentieth.

Important financial as well as architectural consequences followed our decision to go the European route. Both the capital and the operating costs of the National Arts Centre were increased thereby. Larger stages and more gracious foyers were more expensive to build; the smaller seating capacities required larger operating subsidies.

Subsidies: here we arrive at the heart of the matter and, I think, at the one possible source of misunderstanding between the cultural elite and the mass of Canadians. The need for government subsidies for the performing arts, accepted by the elite, is not always understood by the mass in Canada. European theatres have traditionally been subsidized and American ones left to sink or swim commercially. Canada is an American country with European traditions still strong in certain areas. When Maurice Lamontagne sent me off to Europe he was surely signalling not only a preference for the superior design of European houses, but an acceptance of the need for subsidies on a nearly European scale.

So the National Arts Centre was designed, and its operations planned, on elitist lines, with a healthy elitist appetite for the government subsidies that were in fact provided in those days. Thus on our opening in 1969, Mario Bernardi had his wonderful forty-six member National Arts Centre Orchestra to offer the eighteenth-century baroque and early nineteenth-century classical repertoire. Soon afterwards we launched ourselves into opera, generally seen as the most elitist of art forms. In both cases, as we say in show business, we had a hit on our hands. Our orchestra became wildly popular after its first concert; our opera productions sold extremely well within two seasons. Already an elitist by temperament, these experiences made me an elitist by conviction, the proud servant of an enlightened mass audience.

ON GOVERNMENT / ELITE TENSIONS IN THE CULTURAL
FIELD, AND WHAT FELLOWS OF THE ROYAL SOCIETY
SHOULD DO ABOUT THEM

I have shown, I think, that the needs and desires of the elite and of the mass in the cultural field are entirely reconcilable. What is good for the elite is sooner or later recognized by the mass as good indeed. Mass/elite tensions, certainly where the performing arts are concerned, are quite unnecessary and easily avoided. That is the good news.

The complementary notion is that the sort of reconciliation needed should be

a key element in the cultural policy of any government. An expensive element, because elite / mass reconciliation in the performing arts, as I have indicated, means subsidizing the building of excellent theatres and concert halls, and subsidizing excellence among the artists who perform in them.

Now for the bad news. In the last two decades successive federal governments, whether Liberal or Conservative, have failed to maintain earlier subsidy levels and have therefore failed to reconcile the needs and desires of our cultural elite with those of the mass of Canadians. These failures in turn have made a failure of federal cultural policy. Looking back today I think I know what has gone wrong.

Canada is ruled by a prime minister on the advice of the leading members of his party in cabinet and caucus. These men and women, composing the rather volatile political elite already mentioned, are supposed to set our national goals every five years or so. They have been failing us.

By its very nature a political elite should seek the advice of those other elites, businessmen, soldiers, and scientists, whose help it needs to achieve its goals. It should take counsel of our moral and cultural elites as well, to see whether its goals meet the standards of excellence Canadians have set themselves. And it should also of course test the opinions of the mass of our population.

Even as it collects all these views from all these sources, a political elite should try to reconcile them, as in the cultural field I have suggested they can be reconciled with no great difficulty. Only then should ministers begin to shape programs, in the performing arts or elsewhere, and find the funds needed to realize them.

But it is one thing to seek advice, quite another to choose the advice to take. The failure of recent political elites has not occurred in the first stage of this process. Their consulting methods have been impressively numerous and varied. Where business is concerned, a simple telephone call or a luncheon date at Winston's has often done the trick. With the other elites they have seemed less at ease, and have tended to follow a more formal route, such as appointing a royal commission, or more frequently calling for special studies of some kind. Where consulting the mass is required, our constitution provides for elections every five years, but in the interim our politicians have obviously become increasingly addicted to public opinion polls.

The failure of modern political elites, therefore, lies less in the way they seek advice than in the unbalanced way they take it. The present Conservative government, for example, twice returned to power in general elections, keeps reading the polls to determine what the mass may have in mind this week. But how rarely does it listen to what our cultural elite has been demanding for years, proper funding for the arts and for those who practise them professionally! And the last Liberal government behaved no better. That our governments have paid greater heed to opinion polls than to elitist studies in the last twenty years, that their funding decisions have been influenced more by the mass than by the elites (with the possible exception of the business one), shows as clearly in the

populist programs they have shaped as in the cultural ones they have reduced or dropped.

Evidence of the way our present government ignores elitist advice is given by the fate of two studies it commissioned recently in the performing arts field: "Funding of the Arts in Canada to the year 2000" and "Accent on Access" on the National Arts Centre. Both studies represented consultations with the Canadian cultural elite. The one on funding was co-signed by Edmund Bovey, Joan Chalmers, and Michel Theroux, the National Arts Centre one by Tom Hendry, Gilles Potvin, and Nini Baird. Out of curiosity I asked Messrs Bovey and Hendry whether their recommendations had been acted on. Answer: of the twenty-five recommendations Bovey addressed to the federal government, he thought five had led somewhere, though others were perhaps being looked at; of the eight made by Hendry, none.

Compare the situation that exists today with the scene twenty or thirty years ago. Then our cultural elite produced, for the eventual benefit of most Canadians, studies like the Massey report of 1951 and the 1963 National Arts Centre report. The governments of the day accepted the recommendations they offered, shaped and funded the programs required, and produced the Canada Council and the National Arts Centre we know today. Twenty years earlier the CBC and the Film Board had emerged from a similar process. Nowadays all these cultural institutions are in peril.

What has gone wrong? Why have governments stopped taking the advice of our cultural elite, however beneficial that advice has been for the mass of Canadians? Why are those older cultural programs being cut back, or dropped entirely, and the newer ones stifled at birth?

I suspect the answer lies in the altered make-up of our political elite—in the kind of men and women who have dominated both the cabinet and caucus of recent governments. Terence Wills of the *Montreal Gazette* published a revealing article on 2 April, 1989, about our new House of Commons. Here is a brief extract:

"I see more members who have taken on politics as a vocation," said veteran Conservative Howard Crosby of Halifax. "Before, more worked in other fields and then went into Parliament."

Crosby, 55 and a lawyer, believes this change has brought other changes: rather than counting on expertise and ideas, new MPs tend to count on polls. "Their approach is to count noses," Crosby said. "It's part and parcel of being a professional politician."

This nose-counting approach to politics is far from the line Burke took with his electors in Bristol. It is the approach of politicians who have lost confidence in themselves and their ability to govern. In an age where our other elites are flexing their muscles, our political elites are quaking in their boots, even showing early signs of paranoia.

I suggest that this alarming situation calls for urgent attention. The emergence of a new class of weak-willed, nose-counting politicians at the federal level in Canada is having disastrous effects that go far beyond the area of our cultural affairs. If the head of our body politic be sick, how can the arms or legs respond, or the beat of the heart be measured?

Quis custodiet ipsos custodes? Our political masters are spending vast sums on polling and studying *us*. The time has come for *us* to study *them*, and who better than the Royal Society to take on the assignment? "Canst thou not minister to a mind diseased?" asked Macbeth as Birnam Wood moved on Dunsinane.¹⁰ With our affairs in similar crisis, may I not make the same appeal?

We need a searching diagnosis of our political elite of a kind never yet attempted as far as I am aware. It should start with the collection of extremely detailed personal information about the people who compose it. Within a few weeks of any general election we should have a full profile of each and every member of the cabinet and caucus of the governing party, whatever party it may be, for careful scrutiny by the sociologists, political scientists, psychologists and other specialists in the Royal Society.

At least the following information should be collected about each member of our political elite: his date and place of birth, racial and cultural background, education, and places of residence between birth and election. We should have a brief sketch of such places, indicating whether he has a rural, small town or urban background. We should know the languages he speaks, or are spoken around him, his business or profession, his income and the sources thereof, his credit rating. We should know about his health, marital status and children. I suggest we need details too about his tastes and interests, i.e., he is devoted to sports (what sports?), or books (what books?), or music (what music?), etc.

This is the sort of information our political masters would require of us if we sought to enter their service. Why should we not ask it of them as they seek to enter ours? (Perhaps indeed we should have it before a general election rather than afterwards. We might then be able to make a more enlightened choice at the voting booth.)

We should not only have this mass of information collected, before or after each general election, but collated and analyzed. More than that, historians should come up with similar details about our political elites as far back as 1867, make the obvious comparisons, and draw the necessary conclusions. Somewhere some new Darwin will discover at what point exactly came the subtle changes in this elite we failed to notice at the time, but which we now realize are giving us governors who cannot govern.

In the most tentative way possible, I would venture a guess that the explanation for the failure of our political elites in the seventies and eighties, after all the facts have been gathered and analyzed, and all the proper conclusions drawn, will be a very simple one: the escalation in the rewards of office. Until twenty or

10 *Macbeth*, Act V, Scene III.

thirty years ago our political elite was not paid as now, with a salary of \$60,000, a tax-free allowance of \$19,900, a constituency office allowance averaging \$154,000, sixty-four first-class round-trip air fares a year to Ottawa: say, an average of \$250,000 annually for each MP. In the old days the men and women who came to the House of Commons were drawn there by the undoubted spell of politics, but their rewards were measured more in power than in money. As Howard Crosby told Terence Wills, they had usually worked (and succeeded) in other fields before they sought election. They arrived in Ottawa confident in themselves, ready to make difficult decisions and accept heavy responsibilities. All together they made a political elite that worked.

Today, I suspect, fewer members of our so-called political elite have that sort of background. Some still do, may God be praised: each of us could name a handful in each party. But too many are now attracted to Parliament by the lure of TV and the take-home pay. They lack the training and self-confidence to belong to the political or indeed any elite. They replace expertise and ideas, as Mr. Crosby says, by counting noses. For doing that they seem over-paid. Politics, once an art practised by a political elite, has become a market-oriented business run by small businessmen and women. A quarter-of-a-million a year, after all, is the income of a small business.

Whether such a simple explanation is the right one can be determined only after the evidence is weighed. There may be another, or several other explanations. But we must learn what has gone wrong, if we are ever to set it right, strive for excellence again, and to find a solution for the government / elite tensions in cultural policy. That solution will surely lead, through proper arts funding, to an eventual elitification of the mass in Canada, a process much to be preferred to what we have now, the seemingly irreversible massification of our elites.

This appeal, for a major study of our present political malaise, I make in the name both of our cultural elite and of the mass of our people, whose true interests have always been the same, and always will be, as Matthew Arnold assured us in *Culture and Anarchy*:

Again and again I have insisted how those are the happy moments of humanity, how those are the marking epochs of a people's life, how those are the flowering times for literature and art . . . when there is a *national* glow of life and thought, when the whole of society is in the fullest measure permeated by thought, sensible to beauty, intelligent and alive . . .

Culture . . . does not try to teach down to the level of inferior classes . . . It seeks to do away with classes; to make the best that has been thought and known in the world current everywhere; to make all men live in an atmosphere of sweetness and light.¹¹

¹¹ *Culture and Anarchy*, chapter 1.



Fanning the Air: The Canadian State and Broadcasting[†]

It hinders the creative work of the mind if, at first, the intellect examines too closely the ideas as they pour in. (Adapted from *Friedrich Schiller*)

COMPARED to its overall involvement with the arts, the Canadian state's activities in the field of broadcasting are by far the most visible, enduring, extensive, and, alas, controversial. Numerous causes are responsible. The scope of radio and television is extraordinarily wide, embracing both high and popular culture, sports, news, public affairs and other information programming, not to mention advertising. The electronic media are considered to be both the mirror and the cradle of societal values in that they are deemed to be the most widely observed reflections of our lives as well as irresistible shapers of our attitudes. And with respect to what, to many, is the most eloquent yardstick—money—broadcasting accounts for about 70 percent of the federal government's gross cultural expenditure.¹

It is therefore not surprising that substantially more ink or diskette space is devoted to the examination of what fills or fans the air in Canada than to the fare provided by other forms of cultural expression. This preoccupation has in fact led to the quintessentially Canadian ritual of repeatedly conducting major inquiries into the health and prospects of the country's broadcasting system, including a search for the best way of arranging the relations between the state

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[†] Presented at the Symposium, "The State and the Arts," Université Laval, 5 June, 1989.

¹ Table 25 d, "Gross Federal Cultural Expenditure," Canada Council, *Selected Arts Research Statistics*, 8th Ed. (Ottawa: The Canada Council, 1988), p. 86. The percentage is derived from adding the proportion of federal cultural expenditures allocated in the 1988-89 estimates to the CBC (62.5 percent), the CRTC (2.3 percent) and Telefilm Canada (5.6 percent). The comparable figures for the Canada Council are 5.6 percent and for the National Museums Corporation, 7.2 percent. The latter ranks second as the recipient of the highest amount after the CBC, whose 62.5 percent is therefore almost nine times as large as the share of the museums. The national broadcaster's proportion has, however, been declining steadily, from a recent high of 70.4 percent, in 1977-78.

and radio/or television.² Since broadcasting is considered to be intimately linked to national identity, this navel gazing is part and parcel of our uncertainty over, and fascination with, the question of what Canada is all about.

Two common features emerge very strongly from a review of the seemingly endless stream of probes. The first is that, with only one exception,³ their diagnosis of the problems and their suggested recommendations have been strikingly similar over the years. For instance, in some respects, the recommendations of the Caplan-Sauvageau report of 1986 are merely elaborations and updates of the thrust of the Aird Commission report of 1929. Secondly, governments, regulators, and broadcasters have consistently failed to implement many of the most important goals defined by the inquiries. They have been either unable or unwilling to fashion or apply the policies proposed which, of course, is one reason for there being so many successive essays of the same terrain.

A central shared theme of all overviews of Canada's problems in the field of broadcasting is that the national interest can best be met by the dominant or even sole (Aird) presence of public broadcasting, which is seen as being the best means of meeting the special needs of this vast and heterogeneous country. Among these needs none is more important than the provision of programs that will make us less dependent on those emanating from the United States. A major goal, therefore, common to all the enquiries, is to ensure that the airwaves provide ample opportunity for the presentation of Canadian programs and that the broadcasting system be Canadian. Other goals—such as the insulation of the broadcasting system from partisan interference, the desirability of having programs of high quality, of providing varied fare, and of ensuring that the services are available in both French and English and in all regions of the country, including remote areas—have also frequently been identified. But the main theme, relentlessly pursued by all inquiries, stresses the importance of the public broadcaster and of the need to maintain the Canadian character of broadcasting.

2 The relevant bodies were the (Aird) Royal Commission on Radio Broadcasting (1929); the (Massey) Royal Commission on National Development in the Arts, Letters and Sciences (1951); the (Fowler) Royal Commission on Broadcasting (1957); the (Fowler) Committee on Broadcasting (1965); the (Applebaum-Hébert) Federal Cultural Policy Review Committee (1982); the (Caplan-Sauvageau) Task Force on Broadcasting Policy (1986). The dates refer to the time of the publication of the various inquiries' reports.

Other probes which either looked at broadcasting only as a small part of their mandate, or which complemented some of those listed above, are the (Glassco) Royal Commission on Government Organization (1963); the Special Consultative Committee (the Troika) on Broadcasting Policy (1964); the (Davey) Senate Committee on the Mass Media (1970); the (Boyle) CRTC Committee of Inquiry into the National Broadcasting Service (1977). The items noted above (and others) are reproduced *in toto* or in part in Roger Bird, ed., *Documents on Canadian Broadcasting* (Ottawa: Carleton University Press, 1988). A number of reports by the Standing Committee on Communications and Culture, related to the Caplan-Sauvageau Report and to Bill C 136, must also be considered part of this broadcasting canon. They are identified in John Meisel, "Near Hit: The Parturition of a Broadcasting Policy," in Catherine Graham, ed., *How Ottawa Spends 1989-90* (Ottawa: Carleton University Press, 1989).

3 The Applebaum-Hébert report.

Despite these analyses and exhortations, despite repeated probes and much legislation and regulation, the Canadian system, insofar as television is concerned, is massively American, and the relative place of the Canadian Broadcasting Corporation (CBC) vis-à-vis the private broadcasters has steadily declined. Thanks to cable, considerable variety of programming is available in all cities and many smaller centres, but even so the American presence remains paramount. The system is largely free from political intrusion. As far as variety and extension of service are concerned, we have also lived up to expectations. One can therefore conclude that while some successes are evident, and the less important desiderata of the inquiries and subsequent legislation have been realized, the major and most important criteria were and still are neglected. A gaping hole is evident between aspiration and fulfilment.

In light of this, the central question confronting students of broadcasting in Canada—a question which, curiously, has to my mind never been adequately pursued—is why numerous governments (in this context government includes the cabinet and the regulator) have failed effectively to apply the recommendations proposed in one way or another by all the inquiries they commissioned. This is the conundrum I am trying to address in this paper: why the perpetual charade of inquiries, recommendations, failure, more inquiries, more recommendations, more failures and so on and on and on?

Before striking out in pursuit of this question, it is only fair to acknowledge that several authors have not found it difficult to assign blame for the chasm separating promise and achievement in the field of broadcasting. Paul Audley, Robert Babe, Robert Fulford, Sandra Gathercole, Herschel Hardin, A.W. Johnson, F.W. Peers, Liora Salter, Mark Starowitz are only a few among those who have sought to account for our rather sorry record in this domain.⁴ But the explanations proffered generally fail to come to grips with the fundamental causes. To say that the blame rests with the inadequacies of the Canadian Radio-Communications and Telecommunications Commission (CRTC) or the base character of the heads of the CBC and of the CRTC, or the craven nature of private broadcasters, or the union-management situation in the CBC, or the

4 P. Audley, *Canada's Cultural Industries: Broadcasting, Publishing, Records and Film* (Toronto: James Lorimer, 1983); R.E. Babe, *Canadian Television Broadcasting Structure, Performance and Regulation* (Ottawa: Ministry of Supply and Services, 1979); R. Fulford, "Promises, Promises," *Saturday Night*, July 1987, pp. 5-7; S. Gathercole, "Changing Channels: Canadian Television Needs to Switch to a New Formula," *Canadian Forum*, November 1985, pp. 13-18; H. Hardin, *Closed Circuits: The Sellout of Canadian Television* (Vancouver/Toronto: Douglas and McIntyre, 1985); A. Johnson, "Prescriptions for Broadcasting in Canada: Looking Through a Burlap Bag," *Queen's Quarterly* (June 1983), pp. 457-65, and "Fifty-Fifty tv," *Policy Options*, April 1988, pp. 18-22; F.W. Peers, "Canada and the United States: Comparative Origins and Approaches to Broadcast Policy," in *Cultures in Collision: The Interaction of Canadian and U.S. Television Broadcast Policies* (New York: Praeger, 1984), pp. 11-34; L. Salter, "Issues in Broadcasting," "Methods in Regulation," and "The Regulatory Structure for Broadcasting," all three being Research Reports for the (Caplan-Sauvageau) Task Force on Broadcasting, 1985; M. Starowitz, "Slow Dissolve: The Death of Public Broadcasting," *This Magazine*, April 1985, pp. 4-8, 32-33. All of these critics have published a number of other works relevant to the matter discussed here.

inadequacy and form of parliamentary allocations to the public broadcaster, or the economics of broadcasting in North America, or the affinity of Canadians for American programs, may be to identify *some* of the reasons for our shortcomings. But those arguments do not explain enough, nor do they tell us *why* some of these things should be occurring in Canada.

A more fruitful approach must avoid uncausal explanations—the problems are much too complex for that—and it must link the relations between broadcasting and government to their socio-political context. I shall try to meet these specifications by relating the broadcasting world to Canada's dominant value system, the nature of Canadian society, political factors and the ambiguous role of cultural elites.

THE DOMINANT VALUE SYSTEM

Among the conditions that account for Canada's inability to create the kind of broadcasting system called for by the various inquiries and by Parliament, none is as fundamental as the dominant value system of Canadians. This is a daunting subject, defying adequate treatment in a work of many volumes, let alone in a paragraph or two. But at the risk of ignoring considerable diversity reflecting ethnic, regional, and class factors, among others, it can safely be said that Canadians are deeply imbued with democratic values that preclude the blind acceptance of governmental edicts. They respect the state, probably more than do most Americans, but they also insist that there are areas in which they are entitled to considerable personal freedom. One such area is that of broadcasting. If Americans believe that they have a God-given right to fool around with firearms, Canadians assume that their basic rights give them access to any television signal that modern technology makes available. The mushrooming, in the early and middle eighties, of dishes capable of receiving unauthorized signals transmitted by satellite, and the operation even by municipalities of unlicensed cable systems in remote areas, offer eloquent testimony to the widespread and often vociferous insistence by Canadians that no one, the government included, is going to tell them what programs they are going to bring to their magic screens. The unwillingness to abide by rules and regulations in this sector is not new. It echoes the situation in the 1950s when the government finally abandoned the collection of the unpopular radio licence fees from individual households. The cost of collecting them from a reluctant public was not worth the effort.

Most Canadians are not at all parochial when it comes to choosing television programs. Efforts by regulators to increase the availability and viewing of Canadian tv programs encounter many difficulties—the main one being that Canadians prefer American television, generally considering Canadian programs to be dull, with honourable exceptions of course, largely limited to certain public affairs shows that attract massive audiences. But drama and entertainment originating in the United States have an irresistible and sweeping

appeal in Canada. Few viewers are so nationalistic as to be prepared to forgo indulging their taste for American programs for the sake of immersing themselves in Canadian culture. This is no doubt in part accounted for by the paucity of Canadian television dramas. Also, Canada's late arrival on the screen in the early days of tv created viewing habits and tastes attuned to American fare. But whatever the reason, a large majority of Canadians is locked into a television regime dominated by the conventions, styles, and content of the American television industry.

Another feature of the dominant value system that has had a profound effect on broadcasting is the widespread support for the private, rather than the public, sector. The argument is sometimes made that, unlike Americans, Canadians have some sort of innate preference for, and facility with, public, as distinct from private enterprise.⁵ But there is overwhelming evidence that although we distrust state-run companies less than our southern neighbours, we generally prefer to rely on private rather than public initiative. Although there is no Pavlovian rejection of public enterprise, allegedly present in the United States, the normal and most congenial form of economic organization is private. Views on how best to structure broadcasting enterprises are affected by these general predispositions, with the result that valuations of public broadcasters, notably the CBC, but also the provincial systems, are ambivalent. The CBC enjoys the passionate support of some Canadians and the approbation of a majority, but there is also near universal preference for the private broadcasters who attract larger audiences than do the public ones.⁶

Ambivalence towards the CBC is also heightened by at least two other factors: the widely shared impression that much of its programming is less "grabbing" than that of its private and commercial competitors (news programs are exempted from this judgment), and the belief, rooted in a strongly held pluralism, that monopoly or even the predominance of one player, and particularly a tax-supported public broadcaster, is undesirable in the fields of culture and public affairs. This argument was given much currency recently when the CBC was awarded a licence for an all-news specialty service.

The features of Canada's value system noted here provide a partial explanation of one important aspect of the relationship between the state and broadcasting in Canada. While at the outset the Aird Commission recommended, and the government committed itself to, a single broadcasting system in which the

⁵ The classic example of this genre of argument is H. Hardin, *A Nation Unaware: The Canadian Economic Culture* (Vancouver: J.J. Douglas, 1974).

⁶ A large Environics poll conducted in 1987 found that 70 percent of Canadians reacted favourably when told that every Canadian adult contributed nearly \$50 annually to the CBC. When, in the same year, another large sample of Canadians was confronted with the question of whether the broadcasting system needed the CBC, 87 percent answered affirmatively (47 percent saying "a great deal" and 40 percent "somewhat." Environics, *The Media Study* (1987), p. 156; Decima Research, *Attitudes Towards the Canadian Broadcasting System* (1987), pp. 50-52. The best detailed data on the kind of TV programs Canadians are watching and their source is the CBC's *Audience Information Research Newsletter*, produced for internal use by the CBC by its Research Analysis Group, Strategic Planning Branch.

public corporation would come to be either the sole broadcaster or at least by far the most important player, there has been a steady attenuation of this position and a relentless attrition of the place and power of the CBC relative to private companies.

Formal recognition of this significant metamorphosis only came in Bill C 136, the broadcasting legislation introduced in 1988 that was passed by the House of Commons but died on the Senate order paper when a federal election was called. Whereas previous legislation declared that broadcasting undertakings in Canada "constitute a single system . . . comprising public and private elements" in which "paramount consideration shall be given to the objectives of the national broadcasting service," the bill passed by the House in 1988 dropped both the reference to a single system, and to the paramount consideration to be accorded the CBC.⁷ The *de facto* switch from a single to a double system, however, was made as early as 1958 when the CBC lost its regulatory powers over the private broadcasters.⁸

One of the reasons for the relative decline of the CBC vis-à-vis its competitors is the fact that a certain dissonance developed, and grew, between a broadcasting system anchored by a public broadcaster, and the dominant values of the population. These values became increasingly at odds with the scenario that grew out of the Aird Report, because of the advent of television, because of the enhanced choice resulting from technological advances, and because of shifts in the social and political climate. Several characteristics of Canadian society are thus also relevant to the central question of this paper.

THE NATURE OF CANADIAN SOCIETY

Canada is a young country whose population is extremely heterogeneous. Quite apart from the presence of the two major linguistic societies,⁹ there is a bewildering mix of ethnic groups and races. A large proportion of Canadians are immigrants or immediate descendants of immigrants. Although the population is now overwhelmingly urban, the pioneer tradition is still evident in many facets of life. A great many Canadians—newcomers or children of newcomers—have had to gain an economic foothold by means of hard work and

⁷ The relevant parts in the 1968 Act are subsections 3a and 3b. In Bill C 136 they are subsections 3a and 31.

⁸ Excellent discussions of the change from a single to a dual system, prior to the 1988 legislation, are F.W. Peers, *The Public Eye: Television and the Politics of Canadian Broadcasting 1952-1968* (Toronto: University of Toronto Press, 1979); D. Ellis, *Evolution of the Canadian Broadcasting System: Objectives and Realities 1928-1968* (Ottawa: Minister of Supply and Services, 1979); and Peter Gerlach, "Rundfunksystemstrukturen und Rezipientengratisifikationen in Kanada," Ph.D. thesis, Ruhr-Universität Bochum, 1989.

⁹ Both the values and tastes of francophones with respect to broadcasting differ quite significantly from those of anglophones. Although there are overlaps (American TV shows are increasingly popular in Quebec, but not as much as in English Canada), many of the generalizations about Canada in this paper, and particularly those in this section, refer particularly to English Canada and may not always fit the world of our francophone compatriots, and even less the conditions of the original settlers, the Inuit and Indian population.

sacrifice. Upward social mobility, within and across generations, is a notable characteristic of the country, despite the persistence of serious poverty and of socio-political inequalities. With only insignificant exceptions, Canadian society has been totally bereft of an aristocratic presence or tradition and there is no leisure class.

The harsh climate in most of the country, the vast distances between major population centres, and the abundance of extremely attractive scenery have all influenced Canadian attitudes and the Canadian outlook. Canadians tend to be outdoor oriented, somewhat materialistic, responsive to the values of the business community, tolerant towards, but not particularly admiring of, intellectuals or artists. Compared to those of most European countries, Canada's middle class is not composed of voracious readers or assiduous frequenters of cultural events, although this aspect of Canada is, happily, undergoing fairly rapid and important change.

This admittedly somewhat wild and reckless vignette is relevant to the argument being developed here because it adds up to an extremely important fact—the thinness of a cultural class in Canada. There is, of course, a small proportion of the citizenry that is seriously interested in literature and the arts. This is the group, by the way, that provides the core of the audience for CBC radio. In some respects it has even been surprisingly successful, particularly since the end of World War II, in making the country a more stimulating and agreeable place. But both in terms of numbers and influence, this group of Canadians has tended to be hived off from the mainstream of Canadian society. It is not generally held in high esteem (although it is prized more in Quebec than elsewhere) and it is treated less well than other groups by the state (with respect to tax policies, for instance). It lacks the clout to exert serious and enduring influence on the major players in government and the economy. This state of affairs is of course not unique to Canada, but in the field of broadcasting the Canadian situation is comparatively less favourable than in some other places, the United Kingdom for instance. There, the size of the audience demanding challenging and well-acted television is large enough to exact programming of a very high order.

The cultural class has played a critical and somewhat ambiguous role in broadcasting in Canada. As we shall see, it has exerted *some* important influence, although not enough to *implement* the goals it has partly defined. One of the reasons for this lies in some features of Canadian politics, to which I now turn.

THE POLITICAL DIMENSION

Since policy making and implementation are almost entirely political processes, it is not surprising that the design and application (or the absence) of broadcasting policy cannot be explained without recourse to them. Several aspects are particularly relevant in the present context. Some seem trivial but they nevertheless may have far-reaching consequences.

Take the matter of government appointments to the board of the CBC or to the CRTC, for instance. These are, with only a few exceptions, influenced by partisan considerations. Rewarding the party faithful through patronage appointments may, in other words, often be more important in finding the "appropriate" candidate than suitability for the office. Although the quality of appointees to both these boards has, on the whole, been remarkably high,¹⁰ the one question that never seems to be asked concerns the ideological or policy stance of the candidates. This has led, in the case of the CRTC, to members serving on the Commission who were totally out of sympathy with its statutory mandate and even with the government's own avowed positions on matters before the Commission.

One of the reasons is the essentially non-ideological nature of the Canadian party system. Our parties are overwhelmingly electoral rather than doctrinal and so normally attach little importance to ideological concerns. Consequently they eschew elaborating strong policy-centred programs. And such very general platforms as they do from time to time produce shy away from the cultural domain, including broadcasting. This is not surprising, given the character of Canadian society and its values, noted earlier. But the result is that in relation to culture and broadcasting, election campaigns and party programs offer the public a policy vacuum rather than a well-articulated political agenda.

A telling example is offered by a recent attempt to revise the Broadcasting Act. Nothing in Bill C 136 had been foreshadowed in Conservative party statements or speeches during the 1984 election.¹¹ The policy roots are far removed from anything to do with the government party although once the framework of a new broadcasting scenario emerged,¹² it was vigorously espoused and fought for by the Conservative cabinet. It appeared, therefore, to have been Conservative policy to which, in the summer and autumn of 1988, the party attached considerable importance and to which it accorded high legislative priority. Bill C 136, providing the statutory underpinnings for the policy, passed the House, as noted above, and came close to adoption in the Senate, when the election intervened. One might have expected the measure to be re-introduced quickly in the new Parliament. But this has not been done, obviously because the provisions of the old bill no longer reflect the policy of the Conservative government. A new bill will be introduced, differing from C 136. There is no evidence that the government now attaches much importance to this issue or that it is in a hurry to cope with it. The question therefore emerges, whether C 136 embraced the broadcasting policy of the party or

10 I was deeply impressed, when serving on the CRTC (a position, *nota bene*, in my case quite unrelated to patronage), by the speed with which party appointees lost their partisan taint and became totally committed to the folkways and priorities of the Commission.

11 For accounts of the evolution of the policy, see J. Meisel, "Near Hit," and Flora MacDonald, "The Development of Cultural Policy: Some Cautionary Notes," an address to the School of Public Policy, Queen's University, 13 Apr. 1989.

12 Communications Canada, *Canadian Voices—Canadian Choices: A New Broadcasting Policy for Canada* (Ottawa: Minister of Supply and Services Canada, June 1988).

whether it was merely an item high on the personal agenda of the Minister of Communications, apparently rejected by her successor. The party as a whole, or its caucus, thus clearly has no stable views on broadcasting policy. Such positions as are espoused by the government are merely those of the minister who happens to occupy the Communications portfolio, to which the government and the caucus accede if the minister is persuasive enough. If the minister changes, party policy changes. This state of affairs makes it abundantly clear that broadcasting is not assigned sufficient importance to claim a serious and sustained commitment by the party. My example reflects the situation with respect to the Conservatives; when the Liberals were in office, matters were similar.

In being non-ideological and uninterested in cultural issues, our political parties are simply reflecting the mainstream of Canadian society. They act as mirrors rather than as signposts. This fact raises the question of how important it is for political institutions to consist of a cross-section of the population rather than of certain elites, capable of leading the rest towards conditions different from those currently expected by the mass of the population. I need not, happily, address that difficult issue here, but must note that with respect to the highest potential of a rich cultural life, and of the broadcasting system as defined in the legislation, the balance among the party activists is strongly tilted towards mass rather than elite tastes. One consequence is that some of the lofty goals set for the broadcasting system, charted by various commissions and statutes, particularly with respect to the predominance of a high-class public broadcaster, have become increasingly elusive as the years passed by.

This tendency was and is being reinforced by another feature of the political system—its brokerage character.¹³ It is related to the non-ideological and electoral aspect of parties noted above which, among other things, makes the political system highly responsive to the influence of interest groups. Specifically, in the present case, the parties, governments of the day, and (indirectly) possibly even the CRTC, have been affected by the vigorous efforts of the Canadian Association of Broadcasters (CAB) and more recently also the Canadian Cable Television Association (CCTA), the chief lobbyists for private broadcasting.¹⁴ Long before the relatively recent explosion of lobbying and interest group activity generally, the CAB was one of the most powerful and

13 For an interesting exploration of some of the general consequences of brokerage politics, see H.C. Clarke, J. Jenson, L. LeDuc, and J.H. Pammett, eds., *Absent Mandate: The Politics of Discontent in Canada* (Toronto: Gage Publishing Ltd., 1984); J. Meisel, "Dysfunctions of Canadian Parties: An Exploratory Mapping," in H.G. Thorburn, *Party Politics in Canada*, 6th ed. (Scarborough: Prentice-Hall, forthcoming, 1990). But see D.E. Smith, "Party Government, Representation and National Integration in Canada," in P. Aucoin, ed., *Party Government and Regional Representation in Canada* (Toronto: University of Toronto Press, 1985).

14 For an important general analysis, see P. Pross, *Group Politics and Public Policy* (Toronto: Oxford University Press, 1986). Broadcasting aspects are explored by F.W. Peers, *The Public Eye*; E. Austin Weir, *The Struggle for National Broadcasting in Canada* (Toronto: McClelland and Stewart Ltd., 1965); and T.J. Allard, *Straight Up: Private Broadcasting in Canada: 1918-1958* (Ottawa: The Canadian Communications Foundation, 1979).

skilful of lobbyists, benefiting in part from the close links and symbiotic relationship between the media and politicians. The steady erosion of public broadcasting can, in large measure, be attributed to the effectiveness of the CAB's campaigns to enlarge the commercial opportunities of private broadcasting.¹⁵ Earlier I noted the erosion, in the 1950s, of the single system and its replacement by a dual one in which the private sector gained indisputed ascendancy. The turnaround resulted to an important degree from the astute political pressure exerted by the CAB, and later the CCTA, whose influence can in turn be credited to the nature of Canadian society, its dominant values, and the resulting behaviour of Canadian parties.

Ironically, perhaps, the emergence of a system that originally privileged the public sector and the public broadcaster can also be credited to the presence of a pressure group, but an entirely different one. The creation of public broadcasting by the Bennett government in the 1930s was potently influenced by the brilliant lobbying and deft political maneuvering of the Canadian Radio League led by the inspired Graham Spry and Alan Plaunt.¹⁶ More recently, however, lobbying on behalf of public broadcasting has become much less effective¹⁷ and has ceased playing a sustained role in broadcasting politics. It has not managed to offset effectively the considerable ambivalence about the CBC in the country as a whole and particularly among politicians. Canadian cabinets, from at least as long ago as the 1950s, have assumed that the CBC's public affairs programming was partisan and out of sympathy with the government of the day. There is, therefore, a long-standing anti-CBC and anti-public broadcasting predisposition in Ottawa's corridors of power, providing a receptive ear to, and reinforcing, the well-organized campaigns of the private broadcasters and cable companies.

It is probably inevitable that all governments should be overly sensitive about the manner in which the state-supported broadcaster covers the news,¹⁸ but the Liberals' sense that Radio Canada was pro-separatist in the seventies and early eighties, and the Conservatives' conviction that the Corporation's public affairs

15 The fabulous financial success of these efforts is documented in the *Report of the Task Force on Broadcasting Policy* (Ottawa: Minister of Supply and Services, 1986), Part V.

16 F.W. Peers, *The Politics of Canadian Broadcasting: 1920-1951* (Toronto: University of Toronto Press, 1969); M. Nolan, *Foundations: Alan Plaunt and the Early Days of CBC Radio* (Toronto: CBC Enterprises, 1986).

17 There are several reasons: absence of the kind of sparkling leadership provided by Plaunt and Spry; diversification of media, making contemporary programming less essential to many communities compared to the role of radio before the advent of television; the decline of elitism in Canada; and the totally uncritical posture of public broadcasting lobbyists towards the CBC and the resulting image of the public broadcasting lobby as an automatic, self-serving apologist, irrespective of the merits of the case. This image is enhanced by the fact that some of the most visible members of the pro-CBC lobby are known to have lucrative contracts with the Corporation. For a brief flare-up of successful pressure politics on behalf of public broadcasting (notwithstanding the point just made), as exemplified by the Friends of Canadian Broadcasting, see Meisel, "Near Hit," particularly note 35.

18 E. Noelle-Neumann, "The Spiral of Silence: A Theory of Public Opinion," *Journal of Communication*, XXIV, pp. 43-51.

coverage is anti-Conservative and left-leaning, have greatly exacerbated the difficulties of maintaining Canada's original commitment to a strong public broadcasting sector. Ministers wishing to ensure that the CBC is financed adequately, and that the appropriations are made in a manner permitting the Corporation to engage in long-term planning, have encountered heavy weather in cabinet because of animosities arising from the widely-held perception of the CBC as partisan.

A number of factors rooted in the nature of Canadian politics, and related to characteristics of the party system, thus offer explanations of why some of the key recommendations of numerous inquiries into the appropriate scenario for broadcasting have not been implemented, even when they have been enshrined in legislation. Weaknesses in the appointment procedures to the CBC Board of Directors and particularly to the CRTC are among them. So is the non-programmatic nature of our government parties and the resulting tendency to pay little attention to the formulation of a fully articulated, widely discussed, and reasonably enduring broadcasting policy. The general policy weakness of parties is exacerbated in the field of broadcasting by the absence among party activists of many people with strong interests in the arts and culture, and by the marginality in Canada of the cultural community. Brokerage politics and the susceptibility of governments to lobbies, especially the powerful and deft representations of the CAB, have also been important. The declining credibility of the organized public broadcasting advocates has increased the influence of the CAB and of the cable operators. In addition, the ambivalent attitude of many Canadians to the public broadcaster and the conviction of both government parties that the CBC is biased against them when they are in office has further complicated matters and impeded the implementation of policies advocated by the probes into Canadian broadcasting.

THE AMBIGUOUS ROLE OF ELITES

The foregoing discussion contains an intriguing paradox at best, and a glaring inconsistency at worst. Cultural elites in Canada are on the one hand credited with having contributed to the definition of desirable goals for our broadcasting system, while on the other hand they are described as being too weak to have had sufficient influence to effect their realization. There is, in fact, neither a paradox nor an inconsistency. The reconciliation of these two observations goes a long way towards explaining the conundrum posed by this paper.

It is commonplace that all collective decisions are made by elites.¹⁹ The question is, which ones? Ever since Robert Dahl demonstrated that policy decisions result from the efforts of a particular configuration of elites,²⁰ and that

19 For reviews of the immense literature on this subject, see T.B. Bottomore, *Elites and Society* (Harmondsworth: Penguin Books, 1975); Geraint Parry, *Political Elites* (London: George Allen and Unwin, 1969); R.D. Putnam, *The Comparative Study of Political Elites* (Englewood Cliffs: Prentice-Hall, 1976).

20 R.A. Dahl, *Who Governs?* (New Haven: Yale University Press, 1961).

these elite configurations therefore vary depending on the policy area involved, we have known that behind every government decision there is a unique line-up of influence. Although the detailed research still has to be undertaken, it is apparent that Canada's broadcasting policies have resulted from the efforts of individuals who, for one reason or another, had a professional vested or altruistic stake in the issue at hand. The decision-making grid, the cluster of people involved in the formulation of the rules guiding the use of the airwaves, embraced not only some politicians and officials but also members of the various inquiries, their staffs, the briefs submitted by influential witnesses to public hearings, lobbyists, respected journalists and various members of the cultural community whose views on the impending legislation were taken into account when it was being prepared.²¹ The resulting recipes contained in the broadcasting acts of the early and middle thirties, in 1958 and again in 1968, bore the stamp of cultural elites. The latter are articulate, their concern (particularly with regard to the perceived dangers emanating from the accessibility of American programs) was plausible, and they succeeded in fashioning Canada's broadcasting policies. These, as shown above, placed a high premium on Canadian content, the primacy of public broadcasting, and the notion that the airwaves are public property which should be used in the public interest, as defined by the government, its broadcaster, and its regulator.

While these goals, and the associated regulations that evolved in consequence, appeared to meet the approbation of governments and most of the public, it became apparent as time went on that this approval was neither deep, or based on the full realization of its implications. The support they received, it turned out, can be likened to that given many other government measures—tax increases, for instance—which are at first seen to be necessary and are therefore tolerated, so long as they do not affect oneself. The credibility of the policies and regulations was weakened further by persistent attacks from the private sector, intent on maximizing revenue irrespective of the nature of the programming content, and by large numbers of viewers hungry for the most popular outpourings of the U.S. networks. As conflicts emerged between the measures needed to implement the policies and opportunities for broadcasters to amass profits, or citizens to have access to all American signals, and as it became apparent that the realization of the intended scenario would make fairly heavy demands on the public treasury, the support for the enunciated policies became, at best, tenuous. The creators and supporters of what can be termed the "official line"—the expressions of policy goals in the various broadcasting acts—did not have enough influence to outweigh the strong economic interests, societal

21 The general process is mapped in J. Meisel, "Flora and Fauna on the Rideau: The Making of Cultural Policy," in K. Graham, ed., *How Ottawa Spends 1988/89* (Ottawa: Carleton University Press, 1988), pp. 49–80. See also Meisel, "Near Hit," and J. Meisel and J. Van Loon, "Cultivating the Bushgarden: Cultural Policy in Canada," in M.C. Cummings, Jr. and R.S. Katz, eds., *The Patron State: Government and the Arts in Europe, North America and Japan* (New York: Oxford University Press, 1987), pp. 276–310.

pressures, regional voices, political opportunists and others who were either uninterested or unwilling to pay the price needed for its fulfilment.²²

Successive (and, alas, continuing) failures to implement key elements of the various broadcasting policies can, therefore, be ascribed to the inability of the government and of the CRTC to muster either the will or the clout (or both) needed to impose them. The reason does not lie in some inherent weakness of character on the part of the government and the CRTC, but rather in the fact that there was not, and is not, enough politically effective support in the country behind the nationalist and pro-public broadcasting assumptions of the legislation and the regulations needed to apply them. Pogo's celebrated dictum applies: "We have identified the enemy and it is us."

The story, like that of all social reality, can be couched in a number of forms. One of these focuses, as I have here, on the fact that a cultural elite was strong and well-organized enough to prepare and maintain a culturally sensitive broadcast charter which, however, failed to withstand forces inimical to its realization. One of the reasons for this failure is that, in many circumstances, it is easier to muster the strength to create and sell a seemingly feasible project than to assure its realization in the face of apathy or outright opposition. The dissonance between the dreams of the architects and the capacities of the builders and maintenance crew has been too great for the political and administrative machinery to overcome. An important reason for this, as I have argued, is that the values of the architects have not been shared sufficiently by the latter two groups: they represent different value systems and different social, economic, and political interests and networks. The model grew out of elite tastes; the execution foundered because of the prevalence of mass tastes.

A successful harmonization of the idea and the reality would have required that means be found whereby the mechanisms used to implement the former had been more consonant than has been the case with the existing dominant value system, the social structure, and the political milieu. Interestingly, the aborted 1988 legislation and policy went some way towards narrowing the gap between the design and reality. They did so, of course, in part by changing the former. Compared with the 1968 Broadcasting Act, the primacy of the public sector was attenuated, although the CBC, it was asserted, "must continue to be the centre-piece of Canadian broadcasting," and "will continue to play a unique and vital role . . . as the central instrument of the Government's cultural policy."²³

While those, like myself, who believe that a strong public broadcasting system is essential to the Canadian broadcasting scene may regret the growing domination of the private sector, it is evident that the 1988 document was at least realistic. It not only described the status quo but also confronted head-on

22 The formidable economic and other obstacles have often been described. The most comprehensive recent account is in *Report of the Task Force on Broadcasting Policy*.

23 *Canadian Voices*, p. 24, and Communications Canada, "Fact Sheet," n.d. (The Fact Sheet was part of a number of relevant documents released by the Minister of Communications, on 23 June, 1988.)

what is possible in Canada at present, given the circumstances noted above. At the same time, the most recent scenario appeared to be more realisable than most of its predecessors in calling for powerful economic incentives for private broadcasters to produce and exhibit Canadian programs (through the Performance Incentive Program), by strengthening the regulatory powers of the CRTC considerably, by increasing the CBC funding to a level enabling it to present 90 percent Canadian programming in prime time, and by proposing a new Alternative Programming Service which was to have presented high-quality programs derived from both the public and private sectors and from a variety of countries now neglected by Canadian broadcasters.

The new policy had shortcomings, of course. But it came closer than anything we have seen before (had the CRTC tried to pursue it—a moot point) to ensuring that the essence of the traditional blueprint would finally be achieved. There was a chance that under the proposed conditions our broadcasting system would have started becoming significantly more Canadian and that the public sector would have flourished as a critical part of the broadcasting landscape. The observations made above explain in part why this most recent chapter in our quest for a genuinely Canadian system has, like all its predecessors, also failed, and why the prospects for the future are not encouraging.

CONCLUSION

The breezy, self-assured tone of my analysis of our broadcasting woes has probably fooled no one. My argument, as the epigraph slyly indicates, is no more than a hypothesis, one stemming from a deep dissatisfaction with the inadequate understanding we have of why Canada's broadcasting system is, in many critical aspects, not Canadian, why the variety of *types* of TV programs is so limited, and why the quality of what is offered is not higher. As indicated above, the usual explanations, while identifying certain short-run middle-range causes, stop short of addressing the really fundamental reasons. Even the Caplan-Sauvageau Report, the most recent and best of the available probes, failed to dig deeply enough and to peek behind the forces *it* identified as being responsible for the less-than-adequate state of affairs. As a result, its recommendations, while intrinsically compelling, never had a chance of being realized.

The hypothesis sketched in this paper cries out for critical examination. It needs to be tested by an application to specific cases and to fields other than television—radio, for instance—and by exploring whether it is consistent with experience in other cultural domains. The serious pursuit of these and related questions may ultimately lead to a valid diagnosis of the shortfall, in the world of broadcasting, between our best intentions and our performance. Such a diagnosis might, at last, enable us to create and actually implement a consistent policy enabling Canadians to derive the benefits that potentially inhere in broadcasting—and that have so far eluded us.

From No Films to Telefilm: Feature Films and the Canadian State[†]

CANADA'S HOLLYWOOD: AN INTRODUCTION

IN MARCH of Canada's centennial year, the federal government passed the Canadian Film Development Corporation Act. With a "miserable ten million dollars," as Secretary of State Judy LaMarsh put it at the time, the CFDC (now known as Telefilm Canada) was given a mandate to "foster and promote the development of a feature film industry in Canada" through the provision of loans, advice and awards to private producers and filmmakers.¹ Two decades later an industry exists. Last year over \$500 million was spent on film and television production in this country, and Telefilm's budget for 1989-90 is approximately \$145 million.² As one might say, that is the good news. The bad news is that the industry is bedeviled by a host of problems and contradictions. It is still remarkably difficult actually to see a Canadian feature film in a Canadian cinema, and most of the productions are either geared for sale in the American mass market or driven by American dollars and the corporate strategy of the American majors. If the goals of Canadian feature film policy are simply steady employment for film workers and a place in Hollywood's global empire then, perhaps, Canadian policymakers have succeeded. But if the goals of Canadian feature film policy are more discriminating, if they have to do with "interpreting Canada to Canadians" (to quote the mandate of the National Film Board) or with creating the conditions for something other than Canada's

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1 Canadian Film Development Corporation Act, 1967, Sect. 10 (1).

2 The figures are derived from conversations with officials from Telefilm and the Ontario Film Development Corporation. It is almost impossible to arrive at precise figures for feature film production. Instead of considering film and television production as separate entities, "insiders" now speak of a program production industry.

version of Hollywood, then it is too soon, much too soon, to uncork the Bright's.

Without the interventions of the state there would be no Canadian feature film industry to speak of; yet the presence of the state and the need for its continuing assistance have been mixed blessings. State officials have not found the perfect mix of policies to ensure that Canadians are able to see a stable supply of quality Canadian films that speak to our concerns, our values and our history. Hollywood still refashions us in its own image and, at times, the fledgling Canadian industry does more to abet than thwart this process. The border is undefended—it has been for some time—and the flow of images is one-way. Why? Though Canada's feature film industry is still quite young, the relationship between the Canadian state and films of all kind is an old one. Exploring that history will help illuminate the changing characteristics of Canadian cultural policy and bring us closer to both an answer and a solution.

THE STATE AND THE ARTS: WHAT HAS THIS THEME TO DO WITH FEATURE FILMS?

Given that this symposium is on the State and the Arts, I must confess to feeling a little uneasy about my subject. For the most part, feature filmmaking is less an art than a business, and that business is "entertainment." Such is clearly the case when one considers the mecca of commercial feature filmmaking, Hollywood, and its world-wide nexus. But it is no less true of other national film industries in the Western world; they are all driven by a commercial imperative, driven by the need to secure a reasonable financial return on what is a very costly and risky endeavour. Assuming for a moment that we understand what is meant by the term "art," it seems safe to say that most feature film producers do not strive to create works of "artistic" merit and in this respect, at least, most of them succeed.

I raise this point because the term "art" is not value-free, and because the values that it tends to conjure up have played a role in the development of Canadian film policy and cultural policy more generally. Though the distinction between "art" and "entertainment" is a flimsy one, the boundary points between them shadowy and shifting, it has played a significant role in the articulation of Canadian cultural policy. The Royal Commission on National Development in the Arts, Letters and the Sciences, better known as the Massey-Lévesque Report, is a case in point (and an important one at that). Massey-Lévesque defined "culture" as "that part of education which enriches the mind and refines taste. It is the development of intelligence through the arts, letters and sciences."³ In the course of its investigations, Massey-Lévesque became deeply concerned that Canadians had developed an "easy dependence on a huge and generous neighbour"—the United States (p. 272). While the Carnegie and

³Report of the Royal Commission on National Development in the Arts, Letters and Sciences (Ottawa, 1951), p. 7. Further page references of the Report are given in the text.

Rockefeller Foundations were applauded for their support to the "arts" in Canada, Massey-Lévesque recoiled at the spectacle of an "American invasion by film, radio, and periodical" that threatened to "stifle rather than stimulate our own creative effort. We are now spending millions to maintain our national independence which would be nothing but an empty shell without a vigorous and distinctive cultural life" (pp. 18, 15). It was not American culture *per se* to which Massey-Lévesque objected; it was the new mass media and the pernicious effects they could have on the development of the "minds and hearts" of Canadians. It becomes increasingly clear as one reads through the pages of Massey-Lévesque that it was trying to make a distinction between high culture and low culture or, though this is not exactly the same thing, between "art" and "entertainment." The cultural criticisms of Matthew Arnold and F.R. Leavis form the theoretical subtext of the Report; they inform its strengths and underpin its weaknesses.

Massey-Lévesque presented a formidable case for state support to the "arts." It did not present a general case for state support to Canadian culture or communications. The state's role was to be confined to those activities that enrich the mind and refine taste. "Art" was a part of the culture that Massey-Lévesque hoped to promote; "entertainment" was not. The masses had to be edified not mollified. Nowhere was this argument more clearly employed, and perhaps more clearly shortsighted, than in the section of the Report entitled "Films in Canada."

Few people have put the issue in terms as stark as Massey-Lévesque's. "Hollywood refashions us in its own image," the Report reads. "For general film entertainment, Canadians want commercial features; and in this field there is practically nothing produced in Canada. Promising developments in feature films Canadian in character are taking place in Québec; but English-Canadian audiences are still exposed to strange Hollywood versions of a Canada they never thought or wished to see" (pp. 50, 59). If there was a silver-lining in this cinematic cloud of red, white, and blue, it was the work of the National Film Board. Because its productions worked "to evoke an awareness of life, rather than to provide an escape from it," the NFB promoted the more edifying goals of national education and cultural enrichment (pp. 50-51). In the opinion of Massey-Lévesque and other high-minded Canadians, the Griersonian aesthetic of the Board's films made them the perfect antidote to Hollywood's "lazy, weak, reactionary, vicariously sentimental and essentially defeatist . . ." offerings.⁴

While other western nations were developing policies to promote and protect their own domestic feature film industries in the face of Hollywood's invasion, Massey-Lévesque recommended that the NFB's funds be increased, and expressed the hope that Canadian private film producers—far and few between—would try to mimic the Board's style. The Report was ominously silent about

4 John Grierson as quoted in Peter Morris, *The War Years* (Ottawa, 1965), p. 5.

the need to develop a Canadian presence in the field of "general film entertainment" (p. 59). Entertainment was not art: it did nothing to elevate the mind, and the state had no business getting involved in such an endeavour.⁵ Ultimately, in the case of filmmaking as with other cultural pursuits, the Massey Report wanted to see the state develop means to facilitate cultural activities that were not, and should not be, based on commercialism. In fact if the minds and hearts of Canadians were to be nurtured properly, "low" culture had to be countered with "high" culture; the effects of the market and the business of entertainment, of "excessive commercialization and Americanization" (p. 58), had to be countered with state policies designed to promote non-commercialized, traditional and elite-based forms of cultural practice. Massey-Lévesque could not countenance a strategy to promote private, Canadian cultural industries. In the case of filmmaking, it recommended neither subsidies nor exhibition quotas nor discriminatory levies to promote indigenous feature film production. Canada's private industry was on its own. The Massey-Lévesque Report had aimed a sharp arrow at Hollywood's presence in Canada, but its tip was blunt. The status quo would remain in place for another seventeen years.

It is of course unlikely that Massey-Lévesque's implicit cultural theory and its distinction between art and entertainment are alone responsible for its weak recommendations with respect to the indigenous production of feature films. As I have argued at length elsewhere, other factors play an important role in explaining the lack of state support to Canadian feature filmmaking until the establishment of the Canadian Film Development Corporation in 1968.⁶ But since this is a symposium on the State and the Arts, this factor should be highlighted. For if we are concerned with understanding the relationship between the state and cultural practices in all its richness and complexity, then it should be clear that we need to take account of the state's role in regulating and promoting not just the "arts" but what has been called, variously, popular culture, leisure culture, or even mass entertainment. This is particularly the case if our interest in cultural policy goes beyond culture for culture's sake, to recognize that cultural activities help articulate the values, attitudes, and mores that establish meaning and provide the basis for common understanding and communication, or, as the case may be, misunderstanding and miscommunication. As John Meisel noted some time ago, though "comic strips, rock and roll" or mainstream feature films may not be noted for their edifying qualities, they are nonetheless a part of our culture; and indeed, "[b]ecause of their mass appeal and the strength of their communication they are acutely important to anyone trying to understand the relation between culture and political life."⁷

⁵ Consider these remarks by Vincent Massey: "The production of films—that is, of films for general entertainment—prosper best in the field of free enterprise. In Canada we are largely dependent in the commercial cinema on films from the United States or Great Britain, and for the most part we must take what is sent us." (*On Being Canadian* [Toronto, 1948], p. 53.)

⁶ See Ted Magder, "The Political Economy of Canadian Cultural Policy: The Canadian State and Feature Films 1917–1984," Ph.D. Dissertation, York University, 1987, especially Chaps. 1–3.

⁷ John Meisel, "Political Culture and the Politics of Culture," *Canadian Journal of Political Science*, VII (December 1974), pp. 602–3.

The point is that to concern ourselves exclusively with the relationship between the state and the "arts" (assuming for a moment that we could arrive at a satisfactory definition of the latter) is to accept too narrow a focus; what we need to do, even though it may be much more difficult, is to examine the relationship between the state and culture in all its manifestations. It should be equally clear that a cultural policy that takes as its point of departure the need to preserve and protect the "arts" alone will be woefully inadequate at addressing the broad range of cultural practices that mediate our understanding of the world around us.

Perhaps because of my training as a political scientist, I feel much more comfortable with the first term in the title of this symposium, "the state." In Canada the prevailing wisdom holds that the state's role is crucial to the development of something called our national identity, a role made doubly important by the need to offset the enormous inflow of foreign—mostly American—cultural products. As Graham Spry put it long ago, the central question of Canadian cultural policy is: "the State or the United States?" And so it would seem. At the statistical level, at least, the penetration of American culture into Canada is a well-documented phenomenon. So too, at a descriptive level, are the efforts of the Canadian state to offset this penetration. There is no denying the importance of state activities—as a proprietor, a patron, a catalyst or a regulator—to the promotion of Canadian culture. It is fair to say that the level of Canadian cultural production of almost every type would be drastically reduced if such support mechanisms were not in effect. But it should be equally clear that Spry's dichotomy, which was really more a rhetorical device than an analytical insight, is false. The candid answer to the question, the State or the United States? is *both*: both a massive dependency on American cultural products and, on the face of it, a highly interventionist state trying to promote Canadian culture and reduce the level of dependency. Indeed, the relationship between the state and the United States may be even more complicated, for it also should be clear that at certain times the state itself has aided and abetted the flow of American cultural products into Canada.

Cultural nationalists, or those of us who simply believe that Canadians deserve the right to articulate and experience their own cultural pursuits, have long recognized this dilemma. Yet much of the work on Canadian cultural policy suffers from a somewhat simplistic view of the state itself and the nature of its activities. Pessimists have implied that the Canadian state is the *bête noir* of cultural dependency, that "defeatist policy makers" have been responsible for our "continued cultural under-development."⁸ The eternal optimists seem to believe that it is only a matter of time before the right policy mix is designed to ensure that Canadian culture reaches its full potential. As Bernard Ostry has remarked: "The administration of culture has become a big beautiful machine. Only the mind in the machine is missing."⁹ Neither perspective will do for the

⁸ See Susan Crean, *Who's Afraid of Canadian Culture?* (Toronto, 1976), p. 267.

⁹ Bernard Ostry, *The Cultural Connection* (Toronto, 1978), p. 188.

purposes of analytical inquiry because they both mistakenly position the state as an institution that stands above society, aloof—for the purposes of policy-making at least—from the economic, social, and political forces that impinge upon its activities. If Canadian cultural policy appears to be awash in contradictions, it is a sign less of bureaucratic and political incompetence than of the contradictory dynamics within Canada as a whole. This very simple but very crucial point is one of the themes that I want to pursue through a discussion of the history of Canadian feature film policy.

A "FEATURELESS" FILM POLICY: LIFE BEFORE THE CFDC

Aside from Ernest Shipman's short-lived success during the days of silent films, the notoriously bad "quota quickies" of the early 1930s, the brief flurry of Quebec melodramas after World War II, and the few promising, renegade features produced at the Film Board in the early 1960s, Canadian feature film production was virtually non-existent before the establishment of the CFDC. During the period when feature films were the dominant form of visual mass entertainment, Canadians were fixed on images from south of the border. As the Motion Picture Association of America declared in 1953: "Canada ha[d] been one of the bright spots in the world for American motion pictures."¹⁰ That was putting it mildly. As other western countries in the postwar period moved to support their own feature film industries through a combination of box-office quotas and subsidies, the Canadian state signed a pact with the Hollywood majors, known as the Canadian Cooperation Project, which all but guaranteed that Canada would remain the second largest market for Hollywood films outside the United States itself.¹¹

Ironically, the Canadian state had been a pioneer in the use of films for the purposes of statecraft. In the early 1900s it commissioned a series of films (from a company in Chicago) to encourage immigration. In 1918 it established the first state-sponsored film production unit in the Western world. The NFB's predecessor, the Canadian Government Motion Picture Bureau, was designed as "a very important adjunct towards the development of Canadian trade" and it enjoyed brief success in the mid-1920s.¹² But it did not produce feature films, and during the whole of this period the federal government never seriously considered effective legislation to support and protect the production of feature films by either public or private producers. Why?

¹⁰ "Canada Top Booster: Hollywood," *Canadian Film Weekly*, 6 May, 1953, p. 9.

¹¹ See "10% USA Foreign Rev from Canada," *Canadian Film Weekly*, 16 July, 1953, p. 1. On the Canadian Cooperation Project, see Maynard Collins, "Hollywood, Cooperation and Howe," *Cinema Canada*, No. 56 (June–July 1979), p. 34.

¹² Sir George Foster, Minister of Trade and Commerce, *Debates of the House of Commons*, 20 May, 1918, col. 2267. See also Charles Backhouse, *The Canadian Government Motion Picture Bureau 1917–1941* (Ottawa, 1974).

Part of the explanation can be derived from the views held by state officials—both politicians and bureaucrats—about the role of motion pictures. On the one hand, Sir George Foster's opinion that films could be used as adjunct to Canadian trade and the development of Canadian industry was not an isolated one. The first director of the Canadian Government Motion Picture Bureau, Ray Peck, thought the state should encourage American movie companies to establish branch-plant production units to make films for the British market; C.D. Howe was driven by a similar logic in his negotiations with the American majors that led to the Canadian Cooperation Project.¹³ Neither Peck nor Howe gave much thought to the idea of supporting a Canadian owned and operated feature film industry; they gave even less thought to the question of Canadian culture. On the other hand, when the question surfaced, as it did in the pages of Massey-Lévesque, there was little support for the notion that feature films were important to the development of national identity or, as it was often called in those days, national spirit.

It must be emphasized that the views of state officials coincided with the tenor of public opinion. Branch-point production was the preferred industrial strategy of the Canadian bourgeoisie, and there is a good deal of evidence to suggest that those who concerned themselves with cultural issues were little concerned with the lack of Canadian feature films. Numerous public representations before Massey-Lévesque touched on the issue of films in Canada, but without exception they focused on the trials and tribulations of the NFB. The consensus was accurately reflected in Massey-Lévesque's recommendations to increase NFB funding and do nothing about building a feature film industry in this country. It was not that there was no opposition to the inflow of American films, it was rather that there was an ominous silence about a Canadian alternative other than films of a documentary nature.¹⁴ The most that one can say is that there was some public support for the idea of quotas to support the exhibition of more British feature films; Empire Loyalists thought them more enlightening than Hollywood's fare.

This lack of concern over the production of Canadian feature films was reinforced by forces emanating from within the feature film industry itself. From the outset the major American distributors have diligently expanded and defended their hold over the Canadian market. Canada enjoys no special status in this regard. To protect its commercial interests the Motion Picture Association of America has operated tenaciously on a world-wide scale; no country in the Western world that has a vibrant feature film industry has not had to tangle with one of America's most powerful lobby groups—the MPA is quite aptly known as "the little State Department." In other words, one cannot explain the evolution of Canadian feature film policy by exclusive reference to the power of

13 See Magder, "The Political Economy of Canadian Cultural Policy," Chap. 2, pp. 65–66, and Chap. 3, pp. 139–52.

14 See *ibid.*, Chap. 3, pp. 157–58, and Chap. 2, pp. 83–89.

the American majors; they have everywhere resisted attempts to curtail their power and in some instances their efforts have not been completely successful. The key variables in determining the timing and success of a challenge to Hollywood's dominance are the product of domestic social forces.

The structure and inclinations of the domestic film industry are particularly important in determining a successful challenge to Hollywood's reach. As Peter Morris explains, the nascent film industry in Canada never developed a "centralized, monopolistic structure," the very foundation for a viable commercial feature film industry.¹⁵ On the whole, the Canadian industry did not actively support the adoption of state measures to facilitate feature film production. There was not, as there was in Britain or Germany, an association of film producers or directors clamouring for protection.¹⁶ Alan Dwan, a Toronto native who became a Hollywood director in the 1920s, said that "Canada had a movie future but only if it lowered import and export duties so that American firms could avail themselves of Canadian scenery."¹⁷ It was an opinion shared by many. Canadian exhibitors, on the other hand, showed no interest whatsoever in developing Canadian feature films and would have regarded box-office quotas as anathema to their business. Like N.L. Nathanson, responsible for the founding of both Famous Players and Odeon, Canadian exhibitors wanted a stable supply of relatively cheap and popular films. Marquees announcing the newest American titles were good box-office. By the mid-1930s, the two major exhibition chains had formalized a cosy arrangement with the American majors by which screen-time was all but guaranteed for the whole range of Hollywood's product. The arrangement was not forced upon Famous Players or Odeon; they actively sought it out as part of their business strategy to minimize risk. Indeed, it could be said that by *not* introducing legislation, the Canadian state lent its support to this branch of the film industry in Canada. You could make money in the film industry in Canada, as long as you did not try to make a Canadian film.

Plainly put, in the period from which Canadian dependency in the feature film industry dates, broad-based interest in Canadian feature film production did not exist. The lethargy exhibited by the Canadian state in challenging the emergence of Hollywood was not a function of a weak or complicit state *per se*, nor was it a function of American imperialism pure and simple; it was rather a function of broader social and economic dynamics which encouraged, condoned or simply seemed to ignore the emerging relationship of dependency and its ill-effects.

¹⁵ Peter Morris, *Embanled Shadows: A History of Canadian Cinema 1895-1939* (Montreal, 1978), p. 238.

¹⁶ See Simon Hartog, "State Protection in a Beleaguered Industry," in J. Curran and V. Porter, eds., *British Cinema History* (London, 1983); and J. Staiger and D. Gomery, "The History of World Cinema: Models for Economic Analysis," *FilmReader*, 4 (1980).

¹⁷ Alan Dwan, "Canada Has a Movie Future: But Certain Restrictions Must be Removed," *Maclean's*, 1 Feb., 1920, p. 74.

In December 1945, at a banquet sponsored by the Canadian government at the Beverly Hills Hotel to honour the film industry's War Services Committee, Ambassador Lester Pearson lavished praise on the industry as an example of the unique Canadian-American relationship:

We have a common heritage in democratic ideals. We have a common language, common social customs, and in general a common culture. . . . No better illustration of the general and constant commerce between our two countries can be found than that provided by our domestic market. There is no quota for American films shown in Canada. Every theatre in Canada shows them and the documentaries of our government-sponsored NFB are widely shown in your country.¹⁸

Pearson's comments were accurate only insofar as they reflected the complex structure of dependency which had emerged. If his remarks seem platitudinous it is only because they have come to be regarded by most Canadians (and Americans) as common sense—this judgment alone speaks volumes about the embeddedness of dependency. To speak, as Pearson did, of a "common culture" was to obscure the enormous imbalance in the flow of cultural products. Certainly, the balance with respect to films that Pearson tried to describe was a sham. After the war, NFB films quickly disappeared from American screens; indeed, they all but disappeared from Canadian screens as well. In the immediate future, the NFB would be far more preoccupied with survival than expansion, a product in part of America's sometimes vicious prosecution of the Cold War. Pearson's comments were accurate in one respect: there was no quota for American films shown in Canada. And so it would remain. Amongst advanced western nations, nowhere was the Pax Americana more tightly woven into the social and political fabric than in Canada. Hollywood's celluloid threads helped ensure that the "common culture" remained uncommonly American.

"A MISERABLE \$10 MILLION": FEATURE FILMS FOR CANADA

The government's decision to provide financial aid to the production of Canadian feature films was announced by Secretary of State Maurice Lamontagne on 5 August, 1964, on the occasion of the National Film Board's twenty-fifth anniversary. It did not spring forth from the imaginations of state officials acting on their own. Support for the idea had been building for some time and it came from a number of sources.¹⁹ It came, first of all, from filmmakers within the NFB and CBC who wanted to expand their own opportunities for independent

18 "How About a Victory Dinner?" *Canadian Film Weekly*, 2 January, 1946. A number of Canadian film industry representatives were upset that a similar banquet was not held in Canada.

19 See Magder, "The Political Economy of Canadian Cultural Policy," Chap. 4.

production. A new association of 104 Quebecois filmmakers, the Association professionnelle des cinéastes (APC), was the most ardent lobbyist within the film community. Under the leadership of Claude Jutra and Guy Coté, the APC presented impassioned briefs to both the Quebec and federal governments, which laid bare the cultural and economic importance of a Canadian feature film industry. Together with the newly-formed Directors' Guild of Canada, the APC wanted the government to introduce some form of box-office levy to help fund Canadian productions, and they wanted a screen quota to ensure that the *entente cordiale* between the major exhibitors and the American distributors would not restrict the access of Canadian films to Canadian screens. Films such as *A Tout Prendre* (1964, Jutra), *Pour La Suite du Monde* (1963, Perrault) and *Nobody Waved Good-bye* (1964, Owen) suggested that the talent was there.

The notion of government aid for private feature film production received guarded approval from the Association of Motion Picture Producers and Laboratories (though privately the AMPPLC worried that its old nemesis, the NFB, might control the purse-strings). Far more influential was the enthusiasm displayed by Nat Taylor. Taylor was a big-time player in the Canadian film industry. He owned the Twentieth-Century theatre chain, International Film Studios, Beaver Film Production, International Film Distributors, and Allied Artist Pictures. Taylor was also a major shareholder in CJOH, Ottawa's first private television station. His column in *Canadian Film Weekly* was gospel. And the gospel said:

We shall have a production industry in Canada, a good and thriving one, if our government ever gets around to extending a helping hand. We shall make good and marketable films. However, such an industry will not be activated by pseudo-professionals, no matter how enthusiastic . . . The climate is right. World markets are wide open and theatre owners everywhere are glad to play anything that will sell tickets.²⁰

It was business acumen, not cultural romanticism that had led Taylor to these conclusions. He felt that Canadian producers might have an edge over their European counterparts because they could produce films that were "practically indistinguishable" from American ones.²¹ However, in Taylor's opinion, levies, quotas, or other protectionist measures would spell disaster; because of the small size of the domestic market, Canadian films had to be made-for-export and Canadian producers had to learn to compete on the world stage. On the evening of Lamontagne's announcement, Film Commissioner Guy Roberge made a point of expressing the government's pleasure with Taylor's contribution to its plan.

There is no doubt that other forces were at play. The Quiet Revolution had moved cultural issues closer to the top of the political agenda. One of the first

²⁰ Nat Taylor, "Our Business," *Canadian Film Weekly*, 10 Feb., 1960, p. 3.

²¹ Taylor, "Our Business," *Canadian Film Weekly*, 14 Oct., 1959, p. 3.

acts of the Lesage government had been the establishment of a Ministry of Cultural Affairs. Perhaps in response to Quebec's initiative, the Secretary of State was reorganized into a super-ministry of culture and communication; Lamontagne, in turn, was hailed as Canada's first cultural czar (the *Toronto Daily Star* called him "un Malraux Canadien").²² More than anyone else in the Pearson government, Lamontagne, architect of the Royal Commission on Bilingualism and Biculturalism, understood the need to review and rejuvenate Canadian cultural policy. Certainly, Lamontagne's speeches reveal an understanding that the old distinction between "high" and "low" culture could no longer serve as the benchmark for Canadian cultural policy. Undoubtedly, the on-again-off-again current of Canadian nationalism throughout the 1960s only helped solidify the government's desire to overhaul Canadian cultural policy. The feature film policy was part of a loose package of new policy initiatives in the cultural sphere, and it fell into line.

Bill C-204, an Act to provide for the establishment of the CFDC, was introduced in the House in June 1966. It received final reading in March of the following year, a delay for which the government itself was solely responsible. Secretary of State Judy LaMarsh delineated the limits of the new bill. "This is not an anti-poverty program," she told the *Globe and Mail*. "It's to get an industry going which we expect will be able to stand on its own two feet."²³ "We should," she told the House,

be under no illusions about the difficulties which Canadian producers will face in building up a commercially viable industry in the country. They will have to make it commercially viable by exporting their work, which will have to be done by profitable distribution arrangements. Canadian films must prove good enough to win their own place on world screens.²⁴

LaMarsh spoke little of the cultural importance of Canadian films for Canadians. The government, it seemed, saw feature films as a business first and, as Taylor had explained, commercial viability meant making films for export to the United States. What LaMarsh also made clear was that the Canadian government did not want to interfere with the private film marketplace by introducing screen quotas or box-office levies, or a new tax on the remittances to foreign distributors. All of these measures would have angered the Hollywood majors and Nat Taylor. Instead they remained silent as Canada decided to play around with "the miserable \$10 million" that had been allotted to the CFDC. Canadian filmmakers got their loan agency but not the protectionism most of them had hoped for. The CFDC was a compromise, a Canadian compromise, which sought to slightly alter but not seriously challenge Hollywood's dominance and the structures of cultural dependency.

22 "Now Canada Has a Cultural Governor," *Toronto Daily Star*, 18 July, 1964.

23 "The Trials of Judy LaMarsh," *Globe and Mail*, 10 Sept., 1966.

24 *Debates of the House of Commons*, 30 June, 1966, col. 6632.

THE SEARCH FOR A COMPREHENSIVE FILM POLICY:
TOWARDS TELEFILM

Although it may not have been apparent at the time, the CFDC was one of the first state instruments dedicated to the development of a Canadian cultural industry. For those who like to think of culture as "art," the term "cultural industry" is at best an oxymoron; at worst, it connotes the root cause of many of the problems concerning contemporary cultural practices. Be that as it may, the term properly captures the state's intention. Early on, CFDC officials made it clear that their main objective was to create a stable pool of Canadian private producers able to compete successfully in world markets. Explaining the difference between the CFDC and the NFB to a parliamentary committee, executive director Michael Spencer put it this way:

[T]he Film Board has every right to produce, and under its Act can produce feature films, but it seems to me that it is limited in respect to the fact that every film it produces has to be "in the national interest," and particularly interpretive of Canada to Canadians. I think our feeling is that any film that has a chance of developing the Canadian film industry, even if that film is not particularly interpretive of Canada to Canadians, would still be considered and possibly invested in by us.²⁵

The CFDC is a "specialized bank," explained chairperson Georges Lapalme. "We are just investing money and making loans If we were to judge our scripts from an intellectual and cultural point of view we would not be a bank any more."²⁶

This business-like attitude informed the CFDC from the very start, but it was not always dominant. In varying degrees, the CFDC practiced a more culturally-sensitive investment policy, particularly with respect to Québécois films. As it turned out, the tension between culture-as-business and culture-as-art was never fully resolved inside the hallways of the CFDC or the Secretary of State's office. For policy administrators these twin objectives are patently difficult to reconcile: with no alchemists amongst them, CFDC officials never found the proper mixture, neither, it seems, has Telefilm Canada. The public excitement that a success story still generates belies the many failures and false steps that have bedeviled Canadian feature film policy. Making and administering policy in this field is at least as risky a venture as making a film.

When it became clear that the CFDC's \$10 million allotment would be exhausted before a stable core of producers had been established and before the CFDC had become self-financing (it was expected to make money on its investments), the Corporation's policies came under review. In 1973, a new

²⁵ House of Commons, Standing Committee on Broadcasting, Films and Assistance to the Arts, Minutes of Proceedings, 26 Nov., 1968, pp. 419-20.

²⁶ *Ibid.*, pp. 415, 421, 429.

organization of over 150 independent filmmakers, the Council of Canadian Filmmakers (CCFM), launched a political offensive. Proclaiming the state's film policy and the CFDC inept, the CCFM reiterated the need for a screen-quota and then demanded that the federal government "undertake some form of fully publicly supported production."²⁷ The CCFM envisioned the production of approximately fifteen films a year with budgets ranging between \$250,000 and \$700,000. The idea was a non-starter. Spencer told them to go and work for the CBC or the NFB if they wanted public sponsorship. His goal and the government's goal was to create a private, commercially-driven production industry. By 1975, the way ahead lay in voluntary quotas (a scheme that did not work unless there was a Canadian film the exhibitors thought would be a box-office success) and tax incentives.

The infamous tax-shelter boom in feature-film production that lasted from 1978 to 1981 was as close to a planned event as is possible in the area of film policy. The CFDC's new executive director, Michael McCabe, helped orchestrate the flurry of activity by changing the CFDC's financing requirements and arrangements. McCabe made it clear that the CFDC wanted "block-buster" Hollywood-style films. Canadian producers eagerly tried to oblige, but the blockbusters were very far and few between. In 1979, 67 features with budgets totalling \$180 million qualified for tax-shelters, among them *Meatballs*, and *Murder by Decree*.²⁸ Many of the films were commercial flops, many others never received distribution, and worst of all, very few of them were Québécois films. The tax-shelter boom re-oriented the Canadian industry towards the production of English-language films for export, a sorry consequence given that Québécois films had shown themselves to be much more successful than their English-language counterparts. The flurry of productions did nothing to advance the cause of Canadian culture. A detailed study of the tax-shelter policy came to the following conclusions, which are worth quoting at length:

If one is to judge on the basis of what politicians and officials have said are the objectives, the principal reasons for public concern with the state of the film industry are *cultural*, in the sense, for example, that films can (or should) provide a means by which Canadians can explain themselves to themselves and to the world. On the other hand, if one determines the intended objectives in terms of what the policies actually *do* . . . the very existence of the film incentive has in some ways had a perverse effect on Canadian film culture Increased production budgets require large foreign sales (which essentially means U.S. sales) in order to have the slightest chance to recoup their costs. . . . [I]t may be argued that one result of the expanded investment fostered by the tax shelter has been a reduction in "truly Canadian" films.²⁹

27 CCFM, "Policy Statement on Feature Films," *Cinema Canada*, No. 12 (Apr-May 1974), p. 49.

28 See D. Lyon and M. Trebilcock, *Public Strategies and Motion Pictures* (Toronto, 1982), Table 4, p. 80.

29 M. Bucovetsky, et al., *Tax Incentives for Film Production: The Canadian Experience* (Toronto, 1982), pp. 16-17.

The first decade and a half of the attempt to develop a feature-film industry through public mechanisms is not one of the great success stories of Canadian cultural policy. An industry did get off the ground, and a few "classic" films were produced, but on the whole it was a period of constant turmoil, of failures and mistakes. There had been no integration of the production and distribution branches of the industry, an alignment considered essential for long-term commercial viability, and it was still almost impossible to see a Canadian film in a Canadian theatre. Even "steady employment" in an "industry" could not be guaranteed. It was not that Hollywood had sabotaged the project, nor was it the case that state officials had acted blindly or without reason. Instead the traumatic condition of the feature-film industry reflected the deep malaise brought on by the internalization of cultural dependency. The simplest question—what is Canadian culture?—provoked intense debate. It was not at all clear what it was we were to protect and promote. It still isn't. Is it any wonder that Canadian cultural policy reflected this basic uncertainty?

TELEFILM CANADA: HAVE WE ARRIVED?

In 1983, in an effort to boost production of Canadian television programming, the federal government introduced the Broadcast Development Fund. The Fund was to be administered by the CFDC, which in honour of its new responsibilities changed its name to Telefilm Canada. Putting "tele" before "film" may have been merely an aesthetic decision—Filmtel Canada does not exactly roll off the tongue—but nonetheless the new name confirmed a shift in emphasis towards television production. The Broadcast Fund's first year budget of \$35 million represented an eight-fold increase over the CFDC's previous allotment of \$4.5 million. As we have seen, Telefilm's 1989 budget is somewhere in the order of \$150 million, one-fifth of which is reserved for the production of feature films.

Even though the federal government has recently terminated the tax-shelter provisions under which many Canadian productions were made, the program production industry, as it is now called, appears to be on much firmer footing than at any other time in its history. Provincial governments have begun to make their own sizeable contributions to the industry; Quebec, for example, has introduced a tax break amounting to 166 percent and Ontario will spend nearly \$35 million over the next two years in an effort to boost production.³⁰ Most important, the relative price of the Canadian dollar and the increasing expertise of Canadian technical crews have finally attracted Hollywood to Canada. Over half of all television and film productions in this country are now directly backed by American firms. In 1987, 95 percent of the productions made in British Columbia originated in the United States.³¹ Many other Canadian

30 "Ontario pledges \$34.3 million to hold on to film production," *Globe and Mail*, 11 Feb., 1989.

31 "Hot Damn: The B.C. film industry's busting out all over," *Cinema Canada*, No. 151 (Apr., 1988), p. 9.

productions are being designed for the American market and pre-sold to broadcasting, cable and satellite networks south of the border. At the same time, Cineplex-Odeon has become a giant in the North American entertainment business.

That is one side of the current story regarding the film and television production industry. The other side of the story is this: the budget of the CBC continues to be slashed; the celebration of the NFB's fiftieth anniversary looks more like a wake (Colin Low, the Board's elder statesperson, has said that the "the NFB is killed, it will have to be reinvented"); a national program to celebrate Canadian film achievements, Canada Film Year, has collapsed; and the federal government's long, long-awaited film distribution bill is a farce that will do nothing more than uphold the *status quo ante*.³²

It may very well be the case that a relatively stable industry of private producers has been established. But it is not at all clear what most of them have to do with the articulation of Canadian culture. To be sure, the relationship of dependency has been restructured. Many Canadian producers and film workers now operate as part of Hollywood's global nexus; most are satisfied to do so. Canada has been able to develop its own cultural industries, but they have not by any means released us from the grasp of the global cultural network dominated by a few large multinational firms; instead, they have re-inserted us into that network at a new level. Canada's cultural industries have matured. Canadian culture, if its essential attributes can still be distinguished, remains a sheltered and endangered entity. This is not the result of some conspiratorial plot. In many ways, it reflects the normal working of the marketplace, a marketplace driven by near-monopoly power and large pools of capital. Canadians have decided to join that game and the consequences follow as surely as sequels follow the latest Hollywood hit. American imperialism does not go unchallenged because it is all-powerful; it goes unchallenged because there is no powerful opposition to it in Canada. This too is a part of Canadian culture; it alone seems to have little trouble expressing itself.

In Western Europe the phrase "Canadianization" is being used to highlight the increasing marginalization of "national" cultures as multinational firms search for the perfect global cultural product, standardized, homogenized, and profitable. The major American film distributors have paved the way, and though many of the large international media conglomerates are not American-owned, the formula for success is little changed.³³ In the context of the

32 See "The NFB at Fifty", *Globe and Mail*, 29 Apr., 1989; "Collapse of Canadian Film Year," *Globe and Mail*, 3 May, 1989; and "The Real Cost of the Federal Distribution Bill," *Cinema Canada*, No. 157 (Nov., 1988), pp. 19-22.

33 In 1987, Sony Corporation bought CMC Records for \$2 billion. In 1988, it started its own division to produce and distribute American-made films, and it is now considering the purchase of a major American distributor. As one Japanese executive put it: "English-language entertainment is international. Japanese entertainment is just for Japan." ("The Japanese in Tinseltown," *Globe and Mail*, 21 Oct., 1988). Sony's forays are being matched by other non-American firms.

immense technological and institutional changes underway in the field of cultural production, autarky is not a viable or desirable strategy. History is not on our side. We do not have the luxury of fear for the future; we must fear the past. The precedents for a concerted effort to build our own cultural space, on values that go beyond those of the mainstream international marketplace, are weak; they may even be non-existent. It is not a problem that politicians or bureaucrats alone can successfully tackle. It is a problem that challenges the very core of our values, our cultural values and our political values.

ACADEMY II

**Academy of the Humanities
and Social Sciences**

**SYMPOSIUM:
FIGURES IN THE ROUND**



Major Editorial Projects in Canada[†]

CANADA has become noted around the world for major projects of scholarship in the humanities. They have made it possible for researchers, students, and readers of many backgrounds and interests to know in impeccable editions the full range and implication of the writings or activities of important figures or groups in the history of the mind, the imagination, or the language. These projects, carried on by many scholars in a number of scholarly centres who work as teams, have presented special challenge in the initiation and continuation of research and interpretation, and they have led to fruitful new methods of group endeavour in the humanities. Their efforts have involved the work of editorial offices at home base with highly skilled staff, and also the use of computer technology to serve their special needs. The effect will become fully apparent in the future when their results are absorbed by the world community of scholarship to which Canada belongs.

To this session of Academy II, held when a few of the projects alluded to have approached their end and others are in full maturation, three of the directors brought reflections and conclusions about the editorial endeavours of their teams and about their long personal associations with the subjects of their work.

The Royal Society, and Academy II, are not unfamiliar with such projects. Fellows have been involved in a goodly number, for example, Kathleen Coburn in the series for Samuel Taylor Coleridge's writings, or Michael Millgate in the biography and letters of Thomas Hardy, or James McConica in the collected

* Former General Editor, *Dictionary of Canadian Biography*/*Dictionnaire biographique du Canada*, and Professor Emeritus, Faculty of Library and Information Science, University of Toronto.

[†] Presented as the introduction to the symposium, "Figures in the Round," Université Laval, 7 June, 1989.

works of Erasmus in English. In recent years, Joyce Hemlow described her association with the Fanny Burney project to the Academy and Kirk Grayson spoke of the international research behind the endeavours of the enterprise he directs, the Royal Inscriptions of Mesopotamia. My Presidential Address to the Academy in 1986, "Twenty Years of Canadian Biography," outlined a long association as general editor with the volumes of Canada's major bilingual, bicultural research project, the *Dictionary of Canadian Biography / Dictionnaire biographique du Canada*. There have been other presentations that offered insight into the research purpose, methods, and accomplishments of such projects. A session of the Academy's annual meeting has been devoted to the work of the *Historical Atlas of Canada*, headed by William G. Dean, the first published volume of which was edited by R. Cole Harris, a Fellow. Douglas Owram gave a paper about a completed project, the *Collected Writings of Louis Riel / Les Écrits Complets de Louis Riel*, which had George F.G. Stanley, F.R.S.C., as its general editor.

This outline provides only some entries for the list of major undertakings going forward in Canada; that list includes the *Correspondence of Benjamin Disraeli*, the *Spenser Encyclopedia* (with which Fellows Albert C. Hamilton and W.C. Blissett have been working), the Bertrand Russell Papers, *Le Trésor de la langue française au Québec*, the Records of Early English Drama, the *Dictionary of Old English* (founded by the late Angus Cameron, F.R.S.C.), *La Correspondance de Madame de Graffigny*. The list is, even so, by no means exhausted.

It will be clear that an impressive assembly of scholars, editors, and research assistants has been at work across this country in many universities over some thirty years of scholarly work; they have been immeasurably assisted by the collaboration of scholars in other countries, by research institutions in Canada and elsewhere, and by a great number of libraries and archives. Their results have been disseminated by the efforts of a range of scholarly publishers. These projects do, however, mean more than published volumes; they are centres of international communication for the subjects and subject areas they study: their own archives, the constant correspondence they receive, their newsletters, the research methodologies they demonstrate to others have all contributed to this role.

The work of the centres would not have been possible without the support of, first the Canada Council, then the Social Sciences and Research Council of Canada. The councils' substantial grants, supplemented by the host institutions' allotment of space or released time or equipment and by ancillary grants from other bodies, have allowed this impressive build-up of editorial accomplishment. The project I have been associated with, the *DCB / DBC*, has been a very substantial beneficiary, and has therefore been able over thirty years to bring its biographical story of Canada up to twelve volumes and 6,520 persons, in English and in French editions. Changes are occurring, however. In a time of straitened budgets the SSHRC finds itself in difficulties; there are those, more-

over, who question the scale of funding the large projects require or the kind of scholarship they represent. Every one of the projects faces risks and difficult decisions.

In a time when international recognition is at its highest, but when the future is one of uncertainty, it has seemed appropriate to put before the forum of Canada's national academy the record of a Canadian contribution to scholarship of high importance, in which the Society's own Fellows have played a large part. Through this contribution it will at last be possible to study writers, thinkers, languages, a country in their fullness. We can, indeed, hope to see them "with all features fully shown"—in the round.

The first speaker, John M. Robson, F.R.S.C., University Professor in the University of Toronto, has been general editor of the *Collected Works of John Stuart Mill* for some twenty years; at this meeting of the Royal Society he received its Chauveau Medal for a "distinguished contribution to knowledge in the humanities other than Canadian literature and Canadian history." He was followed by Mary Jane Edwards, Professor of English in Carleton University, and general editor of the *Centre for Editing Early Canadian Texts*, established in 1979. The third speaker was John A. Walker, Professor of French in the University of Toronto, and assistant director of the Research Program on *Émile Zola and Naturalism*.



Thirty Years with the Right Project: The Collected Works of John Stuart Mill†

IN A RECENT discussion of major editions in the humanities and social sciences, the Vice-President, Research, of the University of Toronto remarked that the projects had spawned much other research. He was right, and he meant the remark kindly; but, having nearly finished my work on the Mill edition, I immediately had a vision of myself as a sadly attenuated salmon, at the head of the river and the end of life, all passion spelt in a milt down.¹ But it is not I but Mill who matters, and *malgré* Tennyson, who asked what good if the type survives when the individual perishes,² we say this individual lives in type.

Only now is it at all safe for me to make that remark, many long years after the egg was fertilized. In case you are wondering—and many have—the answer is no, we had no idea in 1959, when the planning of the *Collected Works of John Stuart Mill* began, that the edition would go on for thirty years, and not quite be completed in 1989. It nearly is: at this moment, twenty-nine volumes have appeared, two are in the press, and the final two are in the last stages of preparation for publication next year.

In a previous appearance before Academy II, I revealed my distressing

* Department of English, Victoria College, University of Toronto.

† Presented at the symposium, "Figures in the Round," Université Laval, 7 June, 1989.

1 The apparently inappropriate frivolity of my remarks is excused by the Rev. Charles Kingsley: "no man feels himself master of his work, unless he can afford to jest about it; and . . . a frolicsome habit of mind is rather a token of deep, genial, and superabundant vitality, than of a shallow and narrow nature, which can only be earnest and attentive by conscious and serious efforts" ("Mansfield's Paraguay, Brazil, and the Plate," *Miscellanies*, 2 vols. [London: Parker, 1860], Vol. II, p. 6).

2 "So careful of the type she [Nature] seems, / So careless of the single life . . ." Quite unwisely from an editor's standpoint, Tennyson then qualifies even that slight consolation: "'So careful of the type?' but no, / . . . / She cries, 'A thousand types are gone, / I care for nothing, all shall go.'" (*In Memoriam*, LV and LVI.)

obsession with questions,³ so I might as well continue along that jagged edge. Another question that is frequently asked is: Why an edition of Mill, in Canada, edited by someone in an English Department? Obviously more than one sceptical query is involved, but that sequence represents pretty accurately the rather suspicious way the issue is approached. The first part is easily if not always persuasively answered: Mill was one of the most influential sages of the nineteenth century, whose works had obvious importance in the history of ideas, and also in political and social history through the actions of those who responded to his ideas and life. Not only had there never been a collected edition in English of his writings,⁴ but most, including several of the most significant ones, were out of print. Furthermore, the principles of textual editing, so well developed in the preceding quarter century with reference mainly to pre-eighteenth-century authors, were just beginning to be applied to later writers. All considered, it seemed timely to think not just of a collected but a "critical" edition, one based on the best copy-text, with a record of all significant variant readings.

The second part of the question, you will recall, is "Why in Canada?" I should hope that now, with all the evidence of superb textual scholarship in our country, the proper answer is simply (in what is thought a Canadian form) another question, "Why not, eh?" Thirty years ago the answer was perhaps not so obvious. Actually I approached Mill's own publisher, Longmans, with the suggestion in the mid-fifties, to be met with a flat refusal, which even then I understood, on economic grounds. When I raised the issue in Toronto, however, I do not recall anyone bothering to ask, Why in Canada? Economic feasibility was on all our minds, but not as related to a Canadian origin for the edition. If pressed, one can argue, as we under duress have, that Mill, writing when Canada was a part of the British Empire, covered issues generally relevant to us, as well as specifically commenting on one crucial episode, Lord Durham's mission. Robert Fulford has asserted that he discerns a match between Mill's ideas and tone and the Toronto of the 1950s, particularly in the absence of humour: that is his opinion, and I share it with you, though I do not share it. One should remember that the current of internationalism was running swiftly in those years, with our government seemingly at least helping chart a course. Further, if we were less well known in scholarly circles than we have become, there was less attempt to restrict Canadian Studies to narrowly defined areas: in my view Canadian Studies properly includes what Canadians study

3 "What Was the Question?" *Transactions of the Royal Society of Canada*, 4th ser., XX (1982), 235-52.

4 Mill had entertained the possibility, but rejected it, writing to his publisher Longman: "... I have sometimes thought of such a thing [as a collected edition] myself, but was inclined to think that the most suitable time would be after my death, as I am likely, so long as I live, to make material improvements in every new edition of my larger works" (17 March, 1866; *Later Letters*, ed. Francis E. Mineka and Dwight N. Lindley, *Collected Works*, Vols. XIV-XVII [Toronto: University of Toronto Press, 1972], Vol. XVI, p. 1152).

and do. Internationally we are known as prodigious editors; editing is a Canadian thing. In truth and summation, the question, "Why in Canada?", seems to me a silly one, prompted in the past by a sense of inferiority so commanding as to be defining, and in the present by a chauvinism incompatible with history and present reality, with facts and ideals. If an author's ideas are worth renewed and sustained consideration, as for example the Japanese think Mill's are, let us not bother justifying Canadians' making them available.

Before dismissing the matter, however, another reason may be mentioned, for times have changed. There was a quarter-century ago a long-standing Canadian tradition of interest in the History of Ideas. In Toronto's English Department, under A.S.P. Woodhouse, both the curriculum and the scholarship of the faculty reflected that interest, and so far as I know there was no objection to my writing my dissertation on Mill's social and political thought.⁵

As to the massive enterprise of publication, the University of Toronto Press was not averse to taking on a major project as part of its continuing effort to establish Canadian scholarly publishing nationally and internationally; by chance just at that time the commanding *Dictionary of Canadian Biography* was also in its initial phase: together the two projects did much to advance that goal.

One's own motives are usually shrouded in confusion and exculpation, but I can say that my own dedication to Mill was founded not only on shared interests and admiration short of adulation, but more directly on a felt debt of a more immediate kind: in my final undergraduate year I was able to write the same answer on Mill's thought on three different examination papers, in English, Philosophy, and Political Science. (I did not get the same grades, but that is another story.)

About the actual initiation of the edition there are—or were—at least five versions by central players, Woodhouse, F.E.L. Priestley, Marsh Jeanneret (then Director of the University of Toronto Press), Frances Halpenny (then Editor at the Press) and me, very junior to the others. I mention this historical puzzle only to pass it by, as needing too much elaboration for this occasion. However, it suggests an important fact: from the beginning the project was seen as combining the growing strengths of the Press with those of the scholars. The interdisciplinary appeal of Mill and *a fortiori* of the history of ideas made it obvious that the Committee in charge of the project should be drawn from several departments: once more thirty years later this seems a commonplace, but it was not so then. Administratively it appeared at the time, and later proved, wise to have the Committee appointed by the President of the University from the Faculty of Arts and Science and the Press, thus guaranteeing

⁵ I might just say that Woodhouse's original notion was that I consider Mill's *Autobiography* in the light of biographical information, but he accepted my proposal. That no one objected to it after he had approved is not at all surprising.

university interest and support. It was chaired by F.E.L. Priestley, General Editor until 1971, since when I have worn his mantle, though not in his style.⁶

In those days "support" was often more metaphorical than it now is: in the first few years there were funds for a typewriter, stationery, a filing cabinet, and about \$1000 per year for editorial and secretarial assistance. I, however, was given one-third released time, a great boon to me and the edition, a valuable precedent elsewhere, and a not negligible benefit to the students who would otherwise have suffered under my ministrations.

Most of the work of the Editorial Committee was done, of course, in its early years. I have outlined its activities elsewhere, but not in places many of you would or should care to look, so I may be forgiven for tracing again the history of the edition.⁷ From the beginning we were acutely aware that Mill's works had diverse audiences: his interests and learning encompassed more subjects than our more specialized age encourages. At the same time, we decided that consistency in treatment should remain a goal, though not to the discomfort of readers. To cope with the diversity, we decided (a) to gather Mill's writings thematically into volumes arranged internally by chronology, with the lengthy works having volumes to themselves, and (b) to have critical-historical introductions to all the titles, written by specialists. To maintain a reasonable consistency, one textual editor was appointed for the edition.⁸ I am convinced that these decisions were correct in principle: too much unnecessary trouble has arisen in too many editions because of failure to consider audiences and endless quarrels about authority to make particular decisions.⁹

As to the text itself, we looked at the special kind of author Mill was, recognized that he most certainly was not a *literary* man in the modern narrow acceptation, and paid more heed to authorial intention in a broad sense than was then common; we consequently settled on, as copy-texts, the last versions that Mill himself is known or can reasonably be assumed to have approved. Those

6 Initially the Editorial Committee was made up of F.E.L. Priestley (General Editor), John M. Robson (Associate and Textual Editor), V.W. Bladen (Political Economy), Alexander Brady (Political Economy), J.B. Conacher (History), Frances G. Halpenny (University of Toronto Press), Marsh Jeanneret (University of Toronto Press), W. Line (Psychology), R.F. McRae (Philosophy), and A.S.P. Woodhouse (English). Of that group, Professors Conacher, Halpenny, and McRae happily are still active on the committee. Marsh Jeanneret has retired, and death has deprived us of the dedicated talents of Professors Priestley, Bladen, Brady, Line, and Woodhouse. Over the years the wisdom and experience of the Committee has been increased by the services of Professors Douglas Dryer (Philosophy), Samuel Hollander (Economics), Francis Sparshott (Philosophy), Ann P. Robson (History), Harald Böhne (the Director of the University of Toronto Press following Jeanneret), Ian Montagnes (University of Toronto Press), Marion Filipiuk (Mill Project), and Margaret Parker and Jean Houston (the last two from the University of Toronto Press and now retired from the Press and the Committee).

7 My fullest account, one that needs but little revision now, is in "Principles and Methods in the Collected Edition of John Stuart Mill," in *Editing Nineteenth-Century Texts*, ed. John M. Robson (Toronto: University of Toronto Press, 1967), 96-112. I borrow from it this description.

8 With the exception of the letters, as explained below.

9 I do not wish to suggest that my decisions have been taken without sought and unsought advice; however, I have diplomatically striven to appropriate that which seemed wise and ignore the rest.

who are textual editors will know what heresy this was judged in the early 1960s; Mill not being seen as a literary author by the mighty legislators of textual criticism, we survived their neglect,¹⁰ which made our lives quieter than they otherwise would have been, and are now in a period when our decision is seen as being at least interesting, perhaps worthy of consideration, not lamentable, and occasionally correct.

Another important decision was to record all substantive variants in footnotes keyed by markers in the text. That is, rather than adopting the usual practice of gathering all the variants at the end of the volume, and presenting a "clear" text, we decided that the alterations Mill felt necessary, either because he had changed his opinion, new information had come to light, or the rhetoric needed adjustment, should be readily available to those wishing to reconstruct an earlier version. A system of recording the variants, devised by Woodhouse and refined by me in practice, has served us well: it is to me a matter of slight surprise and considerable regret that no one has borrowed it from us. The common practice makes it very difficult to locate and interpret the data, is physically awkward, and wastes space—in short, it mirrors much of modern academe.

A crucial decision was to limit our editorial footnoting, except for the letters, to the identification of people and works cited by Mill. His own footnotes we of course preserved, supplying (in editorial brackets) only corrections and limited additional bibliographic information. This decision made for a cleaner page and most certainly speeded up the editorial work. For good or ill, when we came to materials that bear resemblance to letters, particularly in the amount of allusion to ephemeral events, we adapted the practice used in the correspondence volumes, and supplied informative notes as well. On balance, I now wish that we had given more help to the reader in the other volumes—but the results of cost-benefit analysis will vary according to the assumptions, and mine are not firm.

Another of our innovations was to separate out from the analytic index all references to persons and works. These are gathered in an appendix, arranged as an index, but including, as well as page references, full bibliographic information, details about the works known to have been used by Mill (such as their presence in his library), occasional notes, and the variants between his quotations and the originals. These appendices (which will be consolidated in our final volume) provide a major source of facts about Mill's sources and habits of composition, which by extension cast light on those of other authors in the period, and indeed on the history of the book.

As the edition progressed, the distinctive quality of Mill's corpus led us into ever more interesting and challenging editorial problems. To instance only those that have broad implications, it may be noted that just as when we began

¹⁰ The almost embarrassingly eulogistic reviews the edition has received are nearly all by scholars from non-literary fields.

there were few serious examples of the editing of philosophic works, so as we neared the end we were without good guides to editing newspaper writings and parliamentary speeches. In both cases, and especially the latter, our conclusions are important for historians as well as textual editors.¹¹

The collation of Mill's largest works, his *System of Logic* and *Principles of Political Economy*, was done by teams of four. One read the copy-text while the others followed other editions, the reader stopping to record each variant.¹² For the shorter writings we adapted a method from the University of Toronto Press proofroom (now a memory only): the copy-text was read onto audiotape and then listened to while the eye read the text being collated.¹³ This process was done twice, with errors in the first reading being recorded as well as variants. The tapes were then saved, and used to proofread the galleys and pages, which were also proofed by eye alone.¹⁴

When the initial planning was well under way, we had a great stroke of good fortune: I knew that Francis E. Mineka of Cornell, building on the work of F.A. Hayek, was just completing the manuscript of Mill's *Earlier Letters*, and we were able through the University of Toronto Press to persuade Mineka and Cornell University Press that the letters would initiate our edition splendidly. Consequently the first two volumes of our edition appeared under that title, with little work by any of us except the Press and the initial copyeditor, Jean Jamieson.¹⁵

Now a brief excursus on numbers. Anyone looking at the record (see the Appendix below) will see that the volume numbers and the dates of publication do not run in parallel. The seeming impossibility of planning accurately the publication sequence of a series leads some—the editors of the *Collected Works of Jeremy Bentham*, for instance—to omit volume numbers (except in that case from the correspondence series), but doing so isolates individual volumes from the collection, with unfortunate results for sales and library cataloguers. Our judgment was that in the long run (when, as Keynes said, we shall all be dead) the only important issue will be making it easy for readers—we did not say “users” in those unprofessional days—to find the texts. So to match volume numbers and publication dates needs special skills and experience, and to justify them requires a sophistry that I shall keep in my bag of tools on this

11 For details, see the Textual Introductions to *Collected Works*, Vols. XXII and XXVIII, and my *What Did He Say? Editing Nineteenth-Century Speeches from Hansard and the Newspapers* (Lethbridge: Lethbridge University Press, 1988).

12 The manuscripts were collated separately with the first editions, and the results added to the other collations.

13 When more than one text was collated, the procedure was repeated.

14 This method forms part of the more elaborate procedures of the Centre for Editing Early Canadian Texts.

15 For the record, the University of Toronto Press editors who have so materially benefited our labours are Jean Jamieson, Vols. XII–XVII; Ron Schoeffel, Vols. II–III, X, and with R.I.K. Davidson, IV–V; Rosemary Shipton, Vols. I, VI–IX, XI, XVIII–XIX, and with Margaret Parker, Vols. XX–XXI; Margaret Parker, Vols. XXII–XXV; Susan Kent, Vols. XXVI–XXIX; and Joan Bulger, Vols. XXX–XXXI.

occasion, remarking only that scholarly, technical, and financial exigencies compounded lack of foresight—but it was, I plead, a victimless crime.

One of the most interesting aspects of the edition has been its collaborative nature. In addition to the members of the Editorial Committee, from the beginning there have been contributions by Mill scholars round the world. Inevitably, the time it has taken to complete our work has left sad gaps in the list of our major benefactors. One can now but look backward with gratitude to the close friendship and incalculable aid of Francis E. Mineka, so central to Mill studies, and of Anna J. Mill, who did much of the work for Vols. XXVI–XXVII, which appeared long after her death.

In general, the major contribution by collaborators, as the Appendix shows, is seen in the critical and historical introductions to the volumes they (with members of our Editorial Committee) have written; some have collaborated in the actual editing of the correspondence and other volumes. Second, they have, like librarians and archivists worldwide, been generous of their time and learning, as the acknowledgment pages record all too cursorily. Third, they supported with scholarship and enthusiasm the publication of the *Mill News Letter* that we began in 1965 and have just now ended (sorry, “terminated”); this enabled us to provide a mix of short essays, edited materials, bibliography, news of the edition, queries, and even—apologies to Robert Fulford—humour.¹⁶ Most importantly, however, they were constantly in our minds as present audience, readers, reviewers, and sometimes buyers of volumes, and correspondents on a multitude of topics, almost always helpful and considerate—I exclude a few such as the man who asked me to list and categorize for him all Mill’s uses of the first-person:¹⁷ I did not do so and have not done so—the opportunity is still open if any of you second persons would like to explore Mill’s narcissism.

Closer to home have been all those who have worked directly with me on the editing. Initially, as I have indicated, there was little money for assistance, and I relied on part-time student help, and, for collation of the major works, on teams hired specifically for the tasks.¹⁸ The University of Toronto Press took responsibility for publishing costs, and for the indexing.¹⁹ In 1976 the inauguration of

16 The *Mill News Letter*, with a companion to whose birth it contributed, the *Bentham Newsletter*, has been absorbed into *Utilitas*, a journal published by Oxford University Press, whose first number has just appeared.

17 I am not quite ashamed to say that of this man, whose name was Beg, I remarked that he put all his begs into one askit.

18 Again for the record, and to signal my gratitude, the assistants were Judith LeGoff, Caroline Allen, John Willoughby, Patricia Kennedy, Anne McWhir, Peter M. Jackson, and Dennis Lee, with occasional help from William B.P., John S.P., and Ann Christine Robson. The collating teams included Patricia Buitenhuis, Nenagh Hanly, Ann P. Robson, Stanley Fefferman, and Robert Rodgers. Celia Sieverts provided signal assistance to Professors Mineka and Lindley for the *Later Letters*.

19 The indexers of the various volumes have been Bruce L. Kinzer (Vols. I, IX, XI), Julian Patrick (Vols. II–III), R.I.K. Davidson (Vols. IV–V, X), Maureen Clarke (Vols. VI, and XX in part), R.F. McRae (Vols. VII–VIII), Francis Mineka (Vols. XII–XVII), and Jean O’Grady (Vols. XX in part and XXI–XXXII), who is also editing the cumulative Index volume (Vol. XXXIII).

major editorial grants by the Canada Council (the programs carried on later under various names by the Social Sciences and Humanities Research Council) made an enormous difference to our work. We received two successive five-year grants, and then a three-year one that is just now ending. The money enabled us to hire a full-time research assistant, a full-time post-doctoral fellow (who took on the indexing), and a part-time keyboarder and editorial assistant; we were able to acquire equipment, most significantly a wordprocessor; there was in the first two grants provision to continue and increase the released time for me as general and textual editor; travel funds were available, and publication subsidies helped relieve the pressure on the resources of the University of Toronto Press. Further, the grant induced the University and Victoria College to continue and to enrich their contributions of space, overhead, and equipment; the University also gave a special grant for the hiring of part-time graduate students. From time to time we were able to employ undergraduate students through various government programs.²⁰ It is a matter of considerable pride that all the graduate students who left us after completing their programs have gone on to teaching positions, though they completed their studies in that meagre and lean period of the late 1970s and early 1980s.

It is for others, not me, to estimate how much and in what way our "tricks and manners," as Dickens's Jenny Wren would say, have influenced other projects. I—perhaps someone would like to embarrass me by counting the number of times I have used the first-person—have been asked to join the editorial boards of several other editions, and my advice has been solicited about many others by the editors or granting agencies. I might just venture to mention those I am now affiliated with, because my involvement in them reflects the success of our edition rather than my virtue. And, let it be clear, none of them was actually "spawned" by us, nor has any—except for CECT's use of our oral collating method—adopted specifically our procedures.²¹ On the other hand, though all of them postdate the Mill project and so could not affect our enduring decisions, in most cases their procedures have taught me much and their personnel have given me much to admire.

Professor Priestley served as the first chairman of the editorial board of the edition of Benjamin Disraeli's correspondence at Queen's University, and I succeeded him in that position; their achievements are their own, but our relations have been very close. From its inception the Bertrand Russell edition

²⁰ So much has been contributed by these people that their names must be recorded; the extent and nature of their aid cannot here be described, but it will be obvious that a great deal of the praise that the edition has received is due to their intelligence, skill, and dedication. From the beginning of the government grant Marion Filipiuk has been the full-time research assistant and Rea Wilmshurst the keyboarder and editorial assistant. The post-doctoral fellows have been Bruce Kinzer, Maureen Clark, and Jean O'Grady. The part-time graduate assistants have been John Carland, Martin Kreiswirth, Mary O'Connor, Allison Taylor, Helen Hatton, Mark Johnston, Jonathan Cutmore, Margaret Paternek, Michele Greene, and Jannifer Smith-Rubenzahl; the undergraduates, Mary-Elizabeth Shaw, Marion Halmos, Elizabeth King, John Huxley, John Sipos, and Oliver Tsai.

²¹ There is here no matter for regret: as I have repeatedly argued, different authors in different genres and different periods demand different treatment.

at McMaster University studied our methods, and I have been consulted frequently over the years. One non-Canadian project must be mentioned, the great edition of Jeremy Bentham's works at University College London, with which my connection has been long-standing and intimate. These three have obvious bearings on Mill studies: Disraeli was a face-to-face political opponent, Russell was a god-son, and Bentham in effect a god-father (*secular* being understood in both cases). In each instance also the editorial problems, while far from identical, are generally of the same kind. The works coming out of the Centre for Editing Early Canadian Texts are of course different;²² the contributions of our experience are consequently less direct—if Mill wrote fiction, we know not of it, and do not wish to be informed. It, however, as well as the A.M. Klein edition at Trent, with which I also have the honour to be connected, have been gracious enough to seek our advice about general practice.

That I have left out of this account the extraordinary number of works edited by individuals rather than teams should not be taken to embody a judgment: for many, these are the very heart of the scholarly enterprise, and I dissent only to the extent of asserting that hearts have more than one chamber. But I cannot fail at least to allude to a few other collaborative projects, even though I heighten my danger by returning from myself to the wickedly hegemonous Toronto. With no sense of apology, but rather of pride, I hasten to say that all of the editions I shall mention, though their headquarters are in that vile metropolis, draw directly on scholars countrywide and indeed worldwide.

Sensing the need for a circling of wagons as the economic climate worsened—no greenhouse effect here—the major editorial projects in Toronto formed a consortium whose membership I need only list to demonstrate the impact, diversity, and quality of Canadian editing, scholarship, and publishing, and the interfiliation of practice and experience: the *Dictionary of Canadian Biography*, the Zola project, the *Historical Atlas of Canada*, the *Records of Early English Drama*, the *Collected Works of Erasmus in English*, the *Correspondance de Mme de Graigny*, the *Royal Inscriptions of Mesopotamia*, the *Dictionary of Old English*—and the *Collected Works of J.S. Mill*.

At the very least, then, it will be obvious that we have been involved in what must be judged an astonishing growth of first-rate editions in Canada. The times were right, though they are now out of joint as diminished governmental funding puts a strain on untried ligaments. It is not seemly that I, having had a long innings at the trough, should condemn those who are still reliant on governmental support. We in the scholarly community have got ourselves into a somewhat sorry mess, relying on what seem to us the obvious values of our work, which are anything but obvious to politicians. In this era of universal rights and entitlements, however, it is clear that to place SSHRC funds in the "social envelope," and so make scholarship compete with general health and welfare is to guarantee paranoia—but to lose few votes.

22 See Mary Jane Edwards, "'The Picture's True': The Centre for Editing Early Canadian Texts," pp. 239–46 below.

One can still, however, have faith that the trees that blossomed in the good years will continue to bear fruit. Allan Bloom left one second city for another before he could comment on the closing of the Canadian mind: that there is evidence that our open mouths signal closure elsewhere is all the more reason to ensure, as best we may, that the tradition we have begun continues. The hungry generations need the sustenance provided by the heritage scholars preserve not in amber but in print.

John Stuart Mill is an important part of that heritage. To say that he was not uniformly wise or consistently right is to say little; to say that he makes generally available the practicable options on almost every topic of human concern is to say a great deal, yet it can be said with confidence. I am not arguing for specific *relevance*—we had enough of that mind-numbing demand two decades ago. But what Mill requires of an attentive reader is of permanent worth: he constantly asks for—even when he himself falls short of providing—proof for beliefs. He relentlessly exposes assertion masked as evidence; he fervently requests careful consideration of argument. Without going into detail, I can instance, as the most difficult case, his speculations on logic, which are informed with a pressing desire to clarify the relations between theory and practice, a matter that—usually unconsciously—affects our every action. His economic writings bring out fully the tension between human desire and stubborn matter; they also, as is increasingly recognized, are instinct with the decisive issues of population and environment, not to mention such questions as the perennial ones about the justice and efficacy of taxation and welfare policies. On ethics he remains a challenge to the refiners as well as an inducement to the tyros. His speculations on human nature, with special reference to sexual differences, are thoughtful and instructive. Finally, to choose but one other major matter, his essays bring out clearly the problems of reconciling two major inspiring but competing goals, goals that were his as well as ours, liberty and equality.

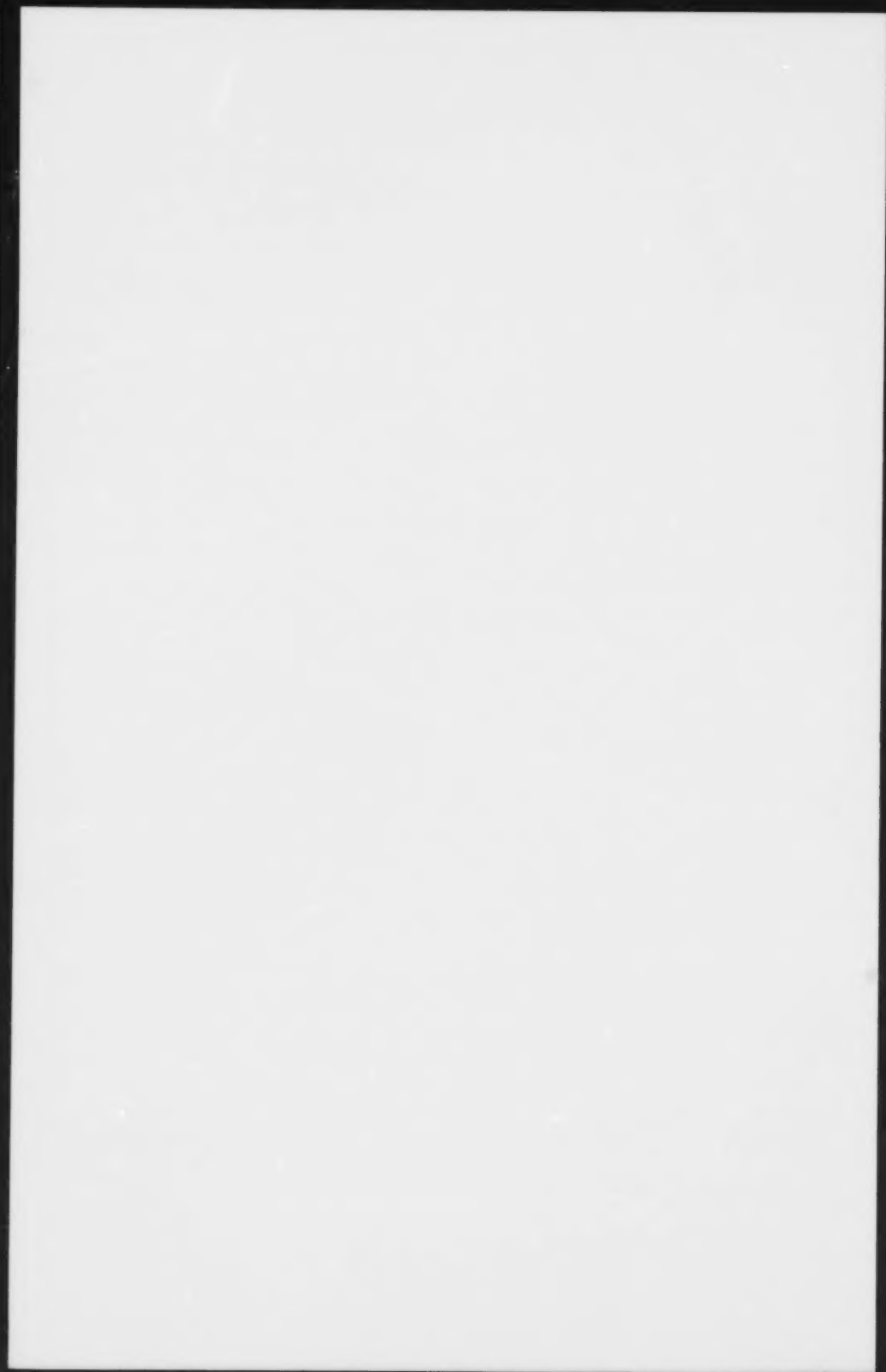
Obviously I do not regret having given most of my professional life to the editing and disseminating of his works. As the accounts but not the books close, I choose for envy a statement by John Lilburne, the seventeenth-century leveller, who expressed, though for entirely other reasons, strong feelings about texts. First let Lilburne speak for Mill: "avowedly I tell you, I invented, compiled and writ that booke, and caused it to be printed and dispersed, and every word in it I will own and avouch to the death"—but then for me—"saving the Printers Erratas, which if you please to give me the booke, and liberty of pen and inke, I will correct and amend them under my own hand, and return to you the booke again, with my name annexed, under my own hand at the conclusion of it."²³

²³ Lilburne, appearing before a Committee in 1647, was concerned to protect his wife, who had issued the book while he was in prison. John Lilburne, *The Resolved Man's Resolution* (1647), quoted in Margaret George, *Women in the First Capitalist Society* (Urbana: University of Illinois Press, 1988), 78.

APPENDIX

COLLECTED WORKS OF JOHN STUART MILL

- Vol. I *Autobiography and Literary Essays* (1981). Ed. and Intro. John M. Robson and Jack Stillinger.
- Vols. II–III *Principles of Political Economy* (1965). Ed. John M. Robson; Intro. V.W. Bladen.
- Vols. IV–V *Essays on Economics and Society* (1967). Ed. John M. Robson; Intro. Lionel Robbins.
- Vol. VI *Essays on England, Ireland, and the Empire* (1982). Ed. John M. Robson; Intro. Joseph Hamburger.
- Vols. VII–VIII *System of Logic* (1973). Ed. John M. Robson; Intro. R.F. McRae.
- Vol. IX *An Examination of Sir William Hamilton's Philosophy* (1979). Ed. John M. Robson; Intro. Alan Ryan.
- Vol. X *Essays on Ethics, Religion, and Society*. Ed. John M. Robson; Intro. F.E.L. Priestley and D.P. Dryer.
- Vol. XI *Essays on Philosophy and the Classics* (1978). Ed. John M. Robson; Intro. F.E. Sparshott.
- Vols. XII–XIII *Earlier Letters, 1812–48* (1963). Ed. Francis E. Mineka.
- Vols. XIV–XVII *Later Letters, 1849–73* (1972). Ed. Francis E. Mineka and Dwight N. Lindley.
- Vols. XVIII–XIX *Essays on Politics and Society* (1977). Ed. John M. Robson; Intro. Alexander Brady.
- Vol. XX *Essays on French History and Historians* (1985). Ed. John M. Robson; Intro. John C. Cairns.
- Vol. XXI *Essays on Equality, Law, and Education* (1984). Ed. John M. Robson; Intro. Stefan Collini.
- Vols. XXII–XXV *Newspaper Writings* (1986). Ed. Ann P. and John M. Robson; Intro. Ann P. Robson.
- Vols. XXVI–XXVII *Journals and Debating Speeches* (1988). Ed. and Intro. John M. Robson.
- Vols. XXVIII–XXIX *Public and Parliamentary Speeches* (1988). Ed. John M. Robson and Bruce L. Kinzer; Intro. Bruce L. Kinzer.
- Vol. XXX *Writings on India* (Scheduled for 1990). Ed. John M. Robson, Martin and Zawahir Moir; Intro. Martin Moir.
- Vol. XXI *Miscellaneous Writings* (Scheduled for 1989). Ed. John M. Robson.
- Vol. XXXII *Additional Letters* (Scheduled for 1990). Ed. Marion Filipiuk, Michael Laine, and John M. Robson; Intro. Marion Filipiuk and Michael Laine.
- Vol. XXXIII *Indexes* (Scheduled for 1990). Ed. Jean O'Grady and John M. Robson.



"The Picture's True": The Centre for Editing Early Canadian Texts[†]

"THE PICTURE'S TRUE" is part of the epigraph on the title page of the first edition of Susanna Moodie's *Roughing It in the Bush*, published in 1852. Francess Halpenny actually chose the title, presumably because, when she was planning this symposium, CEECT had just published its scholarly edition of Mrs. Moodie's seminal autobiography. In fact, the whole epigraph—

I sketch from Nature, and the picture's true;
Whate'er the subject, whether grave or gay,
Painful experience in a distant land
Made it mine own.

—is appropriate for my talk. For the "picture" that I have to "sketch" is "true," "gay," and "grave." Before I describe CEECT as a "painful experience," however, let me answer questions posed to me by Professor Halpenny when we discussed this talk: Why was CEECT needed? What is its scope? and What has it accomplished?

Since the late 1950s, when I was an undergraduate at Trinity College, University of Toronto, one of the areas of greatest growth in Canadian universities has been that of the study and teaching of Canadian literature. In my first year of an Honours B.A. program in Modern Languages and Literature, one of my two obligatory courses in English—I was specializing in English and French—was American literature, which was to include at its end a brief introduction to the literature of Canada. We never quite got to "Can lit," however. Later, in the final year of my Honours program, I read two or three

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† Presented at the symposium, "Figures In The Round," Université Laval, 7 June, 1989.

French-Canadian novels as part of a course on modern French fiction, and in an English course on modern drama and poetry, I was supposed to read some Canadian material. But the major writers, or those authors like Yeats and Eliot whom we were given to understand were central to the great tradition, took all our time.

During my second year in university, however, my parents had moved from Ontario to Newfoundland. My exposure to the rich culture of that island, added to my earlier experiences of Nova Scotia and Quebec—my father was a naval officer and a banker, so we moved frequently—finally sensitized me to the fact that I as a Canadian had a culture that was fascinating in its diversity and possibly even worth exploring seriously as an academic endeavour. So, when the second term of my modern drama and poetry course was drawing to an end and there was obviously going to be no time to discuss Canadian poetry, I asked the professor, Gordon Roper, who had also taught me the American literature course in first year, if I could do an essay on a Canadian poet. Actually I had already decided that I wished to read the works of E.J. Pratt, who had recently retired from Victoria College but about whom I had heard in Newfoundland during the Christmas holidays. Dr. Roper, who was becoming increasingly interested in Canadian literature himself, and was soon to teach one of the first graduate courses in Canadian prose at the University, readily agreed to my request, and I began reading Pratt's "Erosion," "Brébeuf And His Brethren," and "Towards The Last Spike"—in fact, all his poems—with mounting emotion and enthusiasm. Soon after, I decided that I was going to pursue graduate work in Canadian literature, and with whole-hearted encouragement from Dr. Roper, who arranged for me to work with Malcolm Ross at Queen's, I began my graduate studies in the literature of my own country.

I have related this story for three reasons. In the late 1950s and early 1960s Canadian literature was not taken seriously as a subject of study at even the best Canadian universities. When it was included as a subject at all—and for the most part it was not—it usually brought up the rear in courses on American and/or British authors. Even if one did wish to read "Can lit" or teach it to students, it was an almost impossible task, since, except for casebound editions of contemporary Canadian authors, copies of works of Canadian literature were virtually unavailable. I was able to read Pratt, for example, because I had access to the biggest university library in Canada. I could study Pratt—that is, read and mark up my own copy of his poems—because a new edition of his *Collected Poems*, edited and introduced by Northrop Frye, had been published in 1958, and the University of Toronto Bookstore regularly stocked copies of books by the University's professors.

The situation vis-à-vis the teaching of Canadian literature and the availability of moderately-priced reprints of Canadian works improved significantly in the 1960s. The first, and the most important, of several series of reprints, actually begun in the late 1950s, was the New Canadian Library series published by McClelland and Stewart. Its general editor, Malcolm Ross, aimed to provide a

wide variety of works of Canadian prose and poetry from colonial to contemporary times. Despite his efforts, however, there were relatively few early works published in the NCL series, and those that were, through a combination of ignorance, indifference, and the high cost of reprinting small runs of long novels and other prose, were always shortened in various ways. In recent years there have been attempts to ameliorate this situation by reproducing in various forms specific versions of some pre-1900 works, but none of these enterprises has provided, or was intended to provide, the critical editions that at least some of our early prose works so richly deserve and that we so badly need if we are going to understand as thoroughly as we must our Canadian past. The primary intention of the CEECT project was to help fulfil this need for reliable, complete, critically-edited versions of major works of early (pre-1880) Canadian prose.

Five of us at Carleton—three English professors, Robert G. Laird, Robert L. McDougall, and myself; a History professor, S.F. Wise; and a Special Collections librarian, J. Jeremy Palin—began planning in September 1979 the project that came to be known as the Centre for Editing Early Canadian Texts, or CEECT. In July 1980 we applied to the Social Sciences and Humanities Research Council of Canada (SSHRC) for a Negotiated Grant to help support the project; we already had generous support from the University. And on 1 July, 1981, we received a five-year grant. With it we were to hold a conference on editorial principles and procedures, compile an editorial manual, and prepare for publication four to six scholarly editions of major works of early English-Canadian prose. These were Frances Brooke's *The History of Emily Montague*, the work usually called the first Canadian novel, originally published in 1769; Catharine Parr Traill's *Canadian Crusoes*, her very popular tale for young people first published in 1852; James DeMille's *A Strange Manuscript Found in a Copper Cylinder*, the fantastic adventure story written most likely in the 1860s although not published until 1888; John Richardson's *Wacousta*, probably our seminal historical novel, first published in 1832; Mrs. Moodie's *Roughing It in the Bush*; and Thomas McCulloch's *The Mephibosheth Stepsure Letters*, chiefly humorous sketches critical of the manners and mores of Nova Scotians, first serialized in Halifax in the *Acadian Recorder* in the early 1820s.

We held the conference on editorial principles and procedures in May 1983. We issued CEECT's *Handbook for Editors*, our editorial manual, in 1985. The first of our scholarly editions, *The History of Emily Montague*, which I edited, was published in 1985 by Carleton University Press (CUP). *Canadian Crusoes*, edited by Rupert Schieder of Trinity College, and *A Strange Manuscript Found in a Copper Cylinder*, edited by Malcolm Parks of Dalhousie University, were both published in 1986. *Wacousta*, edited by Douglas Cronk of the Open Learning Institute, Vancouver, appeared in 1987, and *Roughing It in the Bush*, edited by Carl Ballstadt of McMaster University, in 1988. *The Mephibosheth Stepsure Letters*, the last of the six works funded under the Negotiated Grant, has undergone a change of editors and various other complications and delays, but it should be published early in 1990.

In the spring of 1985, in fact, we applied for another five-year grant from SSHRCC. This time we competed for a Major Editorial Grant to prepare scholarly editions of six more works of early English-Canadian prose. These were Rosanna Eleanor Mullins Leprohon's *Antoinette De Mirecourt*, an historical novel set in Montreal just after the Conquest, first published in 1864; William Kirby's *The Golden Dog*, probably our most important historical novel, first published in 1877; Richardson's *The Canadian Brothers*, his sequel to *Wacousta* and one of the earliest works to set out the mythopoeic significances of the War of 1812 for the Canadian imagination, first published in 1840; Julia Catherine Beckwith Hart's *St. Ursula's Convent*, the first English-Canadian work of fiction written by a native-born Canadian and published in what is now Canada—Mrs. Hart was born in Fredericton in 1796, and her novel was published in Kingston, Upper Canada, in 1824; Mrs. Traill's *The Backwoods of Canada*, a collection of her letters home to England, first published in 1836; and Thomas Chandler Haliburton's *The Clockmaker*, Series One to Three, the most popular works by a British North American author in the nineteenth century, first published between 1835 and 1840. Once again we were successful, and on 1 September, 1986, we began our second—and since we had originally envisaged a project of a dozen works, final—five-year plan.

Of the six critical editions supported by the Major Research Grant, *Antoinette De Mirecourt*, edited by John Stockdale of Laval, will be published this summer. Douglas Lochhead of Mount Allison University has critically edited the text of *St. Ursula's Convent*, and the apparatus that supports it is being prepared. *The Canadian Brothers*, edited by Donald Stephens of the University of British Columbia, is almost as far along, and considerable work has been done on *The Backwoods of Canada*, being edited by Michael Peterman of Trent University. Because of the complexity of each, the preparation of a scholarly edition of *The Golden Dog*, by Elizabeth Brady of Toronto, and the three series of *The Clockmaker*, by George Parker of Royal Military College, is an enormous undertaking, but so far each is progressing according to the schedule that was accepted by SSHRCC when we were awarded the second grant in 1986. Especially, then, if one considers the colloquia, conference, and seminars we have organized and the newsletters and other occasional publications we have produced over the years, we have done, and are doing, very well.

One reason why we have been able to produce our scholarly editions at a steady pace is that, in planning the project, my colleagues and I considered very carefully theoretical and practical questions that had to do with the precise content of the project, the nature of its editions, the character of its personnel and organization, the methodologies, processes, and systems to be used in the preparation of the editions, and their appearance in published form. To most of our questions, there were several possible answers, and it was often difficult to know if one was right, or even, for that matter, better than another. Having decided to edit major works of early English-Canadian prose, for example, we canvassed colleagues knowledgeable about this period of Canadian literature at

several universities for lists of these works. Since their lists were remarkably similar, the choice of works to edit was relatively easy. We then went through lists of publications—many of which we read—and announcements of work in progress to find possible editors. All the scholars whom we approached were enthusiastic about our proposals, and if, for one reason or another, they could not undertake an edition themselves, they quickly put us on to others who could, and would. When we finally got the editors in place, they were, of course, spread across the country, and we had both a genuine Canadian project and a typical Canadian problem of communication and organization over long distances. We tried to solve the latter by centralizing the project at Carleton. Thus, although the advisors live in various parts of the country, the general editor, the editorial board, and the support staff for the editors—a secretary / wordprocessor, two full-time research assistants, and two graduate students who work ten hours a week each—are located in Ottawa. This centralization had the advantages of economy, efficiency, and proximity to the National Archives, the National Library, and the major holdings of early Canadian material in Kingston, Montreal, and Toronto. It also allowed us to take advantage of the considerable expertise in computing at Carleton and thus to computerise the project as early and as much as possible, a decision that in 1979–80, given the undeveloped state of computing in the humanities, was greeted with considerable scepticism. Finally, having undertaken the task of providing reliable critical editions of important early Canadian works, we—or rather Carleton University Press—decided to use the subsidy for publication that came with both the grants to publish identical casebound and paperback versions of each of our editions and to keep the cost of the paperback as low as possible so that students, and therefore the future readers and teachers of Canadian history and literature, could afford to buy them.

Neither our questions nor our answers lept from a void. Although we had no models to assess in Canadian literature, there were several large SSHRC-funded projects located in Canada that provided us with guidance. We explored, for example, the Dictionary of Canadian Biography project, the Disraeli project, the John Stuart Mill project, and the Records of Early English Drama project. We also looked abroad. We liked many aspects of the Clarendon editions of nineteenth-century English fiction, especially their inclusion of bibliographical data. We focussed much attention on the material on bibliography and textual criticism discussed in "The Center for Scholarly Editions: An Introductory Statement," which had been published in *PMLA* in 1977. We went through this literature on the theory and practice of editing always with interest and often with alarm that scholarly editing could stir such bitterness and so many controversies. Finally, we studied the published volumes in the various editions of American authors prepared at least initially under the aegis of the Center for Editions of American Authors (CEAA).

We quite consciously edit in the so-called Greg-Bowers-Tanselle tradition of Anglo-American editing. Because of the state of knowledge about early Cana-

dian authors and their works, however, we decided that the CEECT editions should also provide more material than, and different kinds of material from, that suggested particularly by the Americans. In each of our editions, therefore, we have tried not only to create a reliable text and apparatus to support it, but also to contribute to knowledge about the history of the book in Canada and to an understanding of Canadian culture.

And what have we accomplished? Well, we have a project that operates efficiently and, as these enterprises go, relatively inexpensively. American editors have, in fact, commented on the frugality of our budget in comparison to the amount a similar undertaking would cost in the United States. The central office at Carleton provides a place where inquiries about the editing of early Canadian prose can be directed. We usually answer them by sending out copies of our newsletters and whatever other material seems appropriate. Sometimes, after we have sent these documents, we hear nothing more. At other times, however, as in the case of those scholars working on a project to edit early Australian texts, the correspondence continues and develops into a genuine dialogue about such topics as editing colonial literature in a post-colonial world and the history of the book in the old British colonies of Australia, Canada, and New Zealand. At Carleton, too, we try to train the graduate students and research assistants who work for us and who will become part of the next generation of scholars not only in such endeavours as collation, proofreading, and verification, but also in the virtues of the critical inquiries of a genuinely open mind and the value of clear, simple prose. Most important, of course, we do have the editions, which individually and collectively are changing the way in which we have traditionally perceived aspects of our heritage.

When we decided to explore Canadian literature in the way we did, we knew from our preliminary research that we would be in for surprises. The nature and number of them, however, has left even the boldest of us shocked. Of the twelve works we have edited or are editing, only Julia Catherine Beckwith Hart's *St. Ursula's Convent* has turned out to have a simple publishing history, in the sense that it appeared only once and in Canada during the author's lifetime. Each of the other works has a different, and much more complicated, publishing history from what we thought, and all but *St. Ursula's Convent* and Rosanna Eleanor Mullins Leprohon's *Antoinette De Mirecourt* were published internationally. The work that we discovered had travelled farthest was James DeMille's *A Strange Manuscript Found in a Copper Cylinder*. In early July 1887 DeMille's widow, who was still living in Halifax, where he died in 1880, offered the manuscript to Harper's, the New York publisher, which bought it almost immediately. In the fall of 1887 Harper's, which planned to run the novel as a serial in *Harper's Weekly* beginning in January 1888, sold for £75 to the *London Illustrated News* the rights to a simultaneous English serialization. At the same time Harper's offered the *London Illustrated News* the right to publish the novel in its Australian edition for £50. Thus it came about that *A Strange Manuscript Found in a Copper Cylinder*, set from the English serial

version, was published in the *Illustrated London News, Australasian Edition* from March to July 1888. We found this information in the papers of Harper's at Columbia University; we verified the Australian part of the story only with great difficulty and through a series of fortunate coincidences.

The Australian version of DeMille's clever and, in many ways, post-modern narrative about an adventure in the South Seas was not a factor either in our choice or emendation of the copy-text, which was the serialization in *Harper's Weekly*. In other cases, however, our discovery of the real publishing history of a work challenged our tentative choice and concept of copy-text and changed our practice of emendations. Our collation of Susanna Moodie's *Roughing It in the Bush*, for example, showed us that during the preparation of the first impression of the first edition by Richard Bentley of London, each sheet had been altered, and that both states of each sheet had been used when copies of the first impression were bound. After the first impression had been issued, moreover, the type was left standing. Some, but not all, of the material that Mrs. Moodie, who was then living in Belleville, had sent to be added to her work, was incorporated; the text was repunctuated, frequently with periods being replaced by exclamation marks so that the tone became increasingly breathless; and a second impression pulled and issued. These circumstances, which we were able to document fully only because of our collations, encouraged us to use an eclectic copy-text and to emend it in very limited ways.

One of our wisest decisions was to include explanatory notes in our scholarly editions. For when the notes for each edition are completed, one sees that in each case one has developed a series of subtexts and contexts for readings of the work. With its large number of specific references to scientific discoveries and theories in DeMille's time in such fields as anthropology, geology, and paleontology, *A Strange Manuscript Found in a Copper Cylinder*, for example, provides a kind of compendium of notions of popular science in the mid-nineteenth century. The explanatory notes, especially those that have to do with literary references, are particularly interesting for the six works by women we are editing, for these annotations indicate the quality and kind of education these literary ladies received and the way they remembered and rephrased their essentially patriarchal lessons, often with subversive results.

Sometimes the explanatory notes serve an even more specific function in reshaping our notion about a work. Those in *Roughing It in the Bush*, for example, should help change in a radical way our readings of Mrs. Moodie's best-known publication. For, in their explication of specific historical incidents and their identification of actual historical people mentioned in *Roughing It in the Bush*, these annotations prove that the work is not primarily a work of prose fiction, that the narrator and chief character has a quite delightful sense of humour, and that the author seldom gave way to flights of romantic exaggeration, but, as the epigraph to the first edition states, sketched "from Nature, and the picture's true." Thus the notes challenge the hitherto generally-received opinions about the genre of the work, the persona of its narrator and chief

character, and the personality of its author. Most importantly, they demonstrate the centrality of Mrs. Moodie's autobiographical narrative as a cultural document about conditions of life in Upper Canada in the 1830s. Like *A Strange Manuscript Found in a Copper Cylinder* and *Roughing It in the Bush*, each of the scholarly editions we have published or are in the process of preparing makes an important contribution to our understanding of early Canadian culture.

Helping us read new versions of our major early Canadian works and to see thereby altered versions of our historical selves: these are no mean achievements. Yet this is what CEECT is accomplishing. The explorations are not easy. The rewards for those who undertake them are sparse. The work is often dreary. Neither the critically-edited texts nor the apparatus are perfect, or final, or, to use an even more inappropriate word, definitive. And the enterprise certainly is not trendy, although intertextualist, post-modern post-structuralists should find material in our editions for their self-reflexive, ironic and parodic, metafictional narrative quests. In my heaven of criticism and scholarship, however, there are many mansions, and the fact remains that ten years ago a group of us dared to do what people had only talked about before, and that act has made—and will continue to make—a great deal of difference in the history of the criticism of, and scholarship on, early Canadian literature and culture.

The "Belle Epoque" Day by Day: La Correspondance d'Émile Zola[†]

AN EDITORIAL PROJECT, like any other research project, is an exercise in learning and teaching—getting the information one needs, and passing it on to other people who need it. What information do we have, and how and to whom do we pass it on, when we work on publishing the letters of a man who lived during the Belle Epoque in France, and who, while he lived, profoundly influenced the thinking of his contemporaries?

First, how do we get the information? We read what Zola wrote, day by day, and to understand what he wrote, we read what he read, day by day. He read, among other things, the newspapers. He did not read them all, because there were simply too many: on any given day of his life there were forty or fifty dailies published in Paris alone, and hundreds in the provinces. As for the foreign press, he did not read it at all, because—as he bitterly complained whenever the subject of French school curricula came up—he was never taught any living foreign languages; but friends and colleagues kept him up to date on what was being written and read in the foreign press. A good journalist has to read the papers, and Zola was, as his correspondence proves, a very good journalist. That is, his thinking was in constant and public interaction with the daily expression of the thinking of his colleagues and contemporaries, as represented in the press. Many of his letters were addressed to these colleagues. Often the letters were prompted, or provoked, by something he had just read; sometimes the letters he wrote in reply were intended for publication in the same daily paper as the piece which provoked them, for the press of the Belle Epoque thrived on vigorous controversy, in fact depended on it for survival in a market where the competition was fierce.

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† Presented at the symposium, "Figures in the Round," Université Laval, 7 June, 1989.

Consequently we, the publishers of his letters, must have these newspapers of a century ago available to us for rapid and convenient reference. And so we thank heaven for two French institutions: first, the law of the *Dépôt légal*, which requires all French publications, including the daily press, to deposit a copy of every issue at the National Library in Paris, so that the Belle Epoque newspapers are conserved in the Library's Periodicals Department; and second, the ACRPP (l'Association pour la conservation et la reproduction photographique de la presse), which is patiently microfilming the National Library's enormous collections of periodicals, thereby assuring not only the survival of these mines of information, but also their availability for distribution to researchers anywhere in the world. In the Toronto offices of the Zola Research Program, we have ACRPP microfilms of all the dailies to which Zola subscribed, as well as several others representing a broad spectrum of opinion.¹ Naturally, the size of our collection is limited by money and space. Chronologically, it begins in the early 1860s when Zola's career in journalism began, and ends with his death in 1902. Within these limitations, the collection is a source of information not only for the publishers of Zola's correspondence, but also for researchers in other areas (politics, theatre, music, the visual arts, etc.), working at all levels from post-doctoral to undergraduate.

For our edition—the first scholarly edition of the 5,000-plus Zola letters which have been found²—we use the Belle Epoque press as a source of two kinds of information. First, as we turn the pages of the papers and immerse ourselves in the preoccupations of the people of the time, we discover letters written by Zola which we had not known about before, and which we find ourselves reading for the first time since they were read a hundred years ago. They are being published as part of his correspondence for the first time in our edition. Second, these open letters that Zola intended for publication in the daily press are usually the equivalent of polemical articles, and they require that we read what Zola read, in order to understand the controversies to which they refer. And so we acquire information about the issues that preoccupied Zola's contemporaries—about the intellectual ferment that characterized the Belle Epoque. Space is not available here for a résumé of all the issues, literary, political, philosophical, that were under constant examination in the press of the period. We try to analyze these issues succinctly in the Historical Introductions to each volume of our edition. But for anyone who wants to get the feel of the period, and who does not have the time or the means for a long stay at the National Library in Paris, I recommend a visit to our Toronto archives and a few days devoted to reading the papers which Zola read and for which he wrote.

1 Collections of the following dailies can be consulted at the Robarts Library in Toronto: *L'Aurore*, *L'Avenir*, *Le Bien public*, *La Cloche*, *Le Cri du peuple*, *Le XIX^e Siècle*, *L'Echo de Paris*, *L'Événement*, *Le Figaro*, *Le Gaulois*, *Gil Blas*, *Le Globe*, *Le Journal*, *Le Journal officiel*, *La Libre Parole*, *Le Matin*, *Le Petit Journal*, *Le Rappel*, *La Réforme*, *Le Réveil*, *Le Sémaphore de Marseille*, *Le Siècle*, *La Tribune française*, *Le Voltaire*.

2 Émile Zola, *Correspondance*. Editeur: B.H. Bakker, Conseiller littéraire: Henri Mitterrand, Montréal, Les Presses de l'Université de Montréal/Paris, Editions du CNRS, 1978–87. Six volumes have appeared to date.

But to speak only in terms of the papers for which Zola wrote is to oversimplify the question of his relations with the press, and his use of the press to influence opinion. Until very recently, most of his biographers thought that his career as a contributor to the daily press, as a *chroniqueur* or commentator-columnist, began in late 1863 with a few articles published in a provincial paper; that it really took off in 1865 when his signature began to appear frequently in several Parisian and provincial papers; and that it came to an abrupt halt in 1881 when he declared, in the final article of a series in the *Figaro*, that he was saying goodbye to the press. This phase of his career, 1863 to 1881, was documented by Zola himself in a series of five volumes containing a selection of the articles first published in the press;³ and recently Henri Mitterand and his colleagues published two bibliographical catalogues, under the title *Émile Zola journaliste*,⁴ listing all the articles of the period.

There is a problem involved in reading these articles in volume form, which is of course the most convenient way for a twentieth-century researcher to read them. Many of the articles deal with literary theory and / or criticism. For years, these articles were read as Zola's definitive declarations of faith in naturalism—as his statements of belief about what literature ought to be and do. And for all his life, as well as for decades after his death, critics used these articles against him, to demonstrate that his novels failed to correspond to his own stated requirements for the genre. The conclusions, for his adversaries, were clear: either his literary theories were wrong, or his novels were inferior, or both.

The discovery of the principle of the intentional fallacy put an end to the more blatant manifestations of this kind of criticism. Responsible critics stopped pointing the finger of scorn at artists simply because their works failed to carry out their announced intentions. Still there remained, even among Zola's admirers and supporters, some doubts: a nagging sense that perhaps he did not really know what he was doing when he wrote *Germinal* or *L'Assommoir*, because there is so much more in them than the things he talked about in his articles.

The reading of his correspondence suggests two answers to these doubts. First, when he writes to his fellow-novelists like Huysmans, in personal letters not intended for publication, he admits perfectly frankly that a novelist doesn't know what he is doing until it's done.⁵ And second, the correspondence gives us information about the circumstances that gave rise to the theoretical articles, and forces us to do some thinking about different kinds of meaning that a text can have when it is read in different contexts. If his novels do not correspond to his so-called theories of the novel, it is because the articles we read in the books are not *only* theories of the novel; they are also, and when they were first published they were read primarily as, polemical journalism. The articles were

3 *Le Roman expérimental, Les Romanciers naturalistes, Le Naturalisme au théâtre, Nos Auteurs dramatiques, Documents littéraires* (Paris: Charpentier, 1880, 1881). Republished in *Oeuvres complètes*, éd. Henri Mitterand, Vols. X–XII (Paris: Cercle du livre précieux, 1968, 1969).

4 Paris, Les Belles Lettres, 1968, 1972. Henri Mitterand and Halina Suwala are the authors of the first volume; Roger Ripoll of the second.

5 Letter of 20 May, 1884, to Huysmans (Vol. V of the *Correspondance*, p. 108).

usually replies or reactions generated by particular controversies in particular situations. The situations and controversies were determining factors in the language Zola used in replying and reacting to them. But when the language is read in books, and not as it was originally read in the columns of the daily press, the context is altered, and the meaning is altered.

Zola's contemporaries knew that they were free to exploit the ambiguities that occur when the same words are read in different contexts: they could choose between two ways of reading the articles, as polemic, or as theory. We, a hundred years later, have that kind of freedom when we read our own contemporaries. But if we want to experience that ambiguity and that freedom to interpret when we read collections of articles from the press of the Belle Époque, we have to go to our ACRPP microfilms, and read the articles in their original journalistic context. Even before we start reading the texts, the polemical nature of the context declares itself in the titles of the newspapers: *La Cloche*, *Le Corsaire*, *Le Gaulois*, *La Marseillaise*, *Le Rappel*, *La République des lettres*, *Le Salut public*, *Le Siècle*, *La Vie moderne*, *Le Voltaire*—the atmosphere is already present in the titles. That atmosphere of constant controversy imposes certain ways of writing on the journalists, and certain ways of reading on the readers. To get the information about that atmosphere, we need to read the papers. If we do not, our information about the thinking of the Belle Époque, and about Zola's involvement in and influence on that thinking, is incomplete.

So much for Zola and the daily press up to 1881. On 22 September of that year, he published the *Figaro* article entitled "Adieux,"⁶ in which he announced that he was abandoning the profession of journalism to devote all his time and energy to writing novels. And so Henri Mitterand concluded at the year 1881 the first volume of *Zola journaliste*, the catalogue of all the articles Zola had published up to that date in the Belle Époque newspapers. Does this mean an interruption in Zola's activities as an influential contributor to the press?

It most emphatically does not. Zola still had plenty to say in the newspapers about literature, not to mention politics, the plastic arts, theatre, music, in fact about all the other subjects over which his contemporaries were having arguments. But in order to say it, he adopted a new strategy—a strategy which, before the publication of his correspondence, had caused researchers to underestimate his rôle as an opinion-maker in the seventeen-year interval between his farewell to journalism in 1881 and his momentous return just before the turn of the century—an event to which the date of 13 January, 1898, has been assigned, the date on which he published "J'accuse" in the daily *L'Aurore*. (And it must be remembered that "J'accuse" was composed in the form of a letter.)⁷

What we have discovered, as we read our way through his post-1881

6 Reprinted in *Oeuvres complètes*, Vol. XIV, pp. 663–9.

7 Reprinted *ibid.*, pp. 921–31.

correspondence, is that in fact he never left the press at all. To a limited degree we were already aware of this, for we knew that he followed the custom of the Belle Epoque in publishing his novels as serials in the dailies (or occasionally in the weeklies) before they came out in book form. He always fulminated against this custom; time and time again, in letters to friends and colleagues, he declared that he could not bear to see his novels mercilessly chopped up, and begged them not to read him that way. But he kept right on publishing them that way, because the daily press paid handsomely for the pre-publication rights to the works of a famous and controversial writer, and this money constituted a significant part of his income—approximately a quarter of it, according to the best estimates we can make. (And unlike Flaubert, but like Balzac, he had absolutely no source of income other than his writing.) This practice of serial publication in the dailies raises again the question of interference between context and meaning. When Zola wrote *Germinal* in 1884–85, he had said his farewell to journalism. Nevertheless, *Germinal* first appeared as a serial in the daily *Gil Blas*. Like all serials in the French dailies of the Belle Epoque, the text was presented as the *feuilleton*, that is, it was spread across the bottom of the front page of the paper, in the position referred to in the business as the "ground floor." The rest of the front page was devoted to news and commentary, presented in vertical columns as in the twentieth-century press (but without photographs, of course). The text of *Germinal* in the *Gil Blas*, spread horizontally across the "ground floor" of page 1, is clearly separated from the other material, the political and social news; nevertheless it is seen as closely juxtaposed to the news. And that is how Zola's contemporaries first read *Germinal*, however eloquently he may have begged them not to read it that way. *Germinal* was not only a work of literary art; it was news. For most of his readers in the Belle Epoque, it was probably read more as news than as literary art. A hundred years later, for historians who want as much information as they can get about how people of the Belle Epoque thought and felt, it is of course essential to read *Germinal*; but the best way to do so is to spend a few hours with the microfilm of the *Gil Blas*, reading *Germinal* as news.

Still, there was nothing new in that part of Zola's post-1881 strategy. What was new, and what we have been finding out as we read his correspondence with other journalists, is that he continued to maintain his presence in the dailies, not only on the ground floor of page 1, but also in the news columns, no longer as *chroniqueur*, but in a new (and as it appears to us, quite modern) rôle, as interviewee. By 1881 he was a celebrity, being the author of several controversial books and dozens of controversial newspaper articles. And so, every time a new controversy developed in Parisian intellectual circles, the newspapers sent reporters round to his Paris apartment, or to his country home at Médan, to get his opinion about the subject of the day.

This was a very convenient arrangement for him. He did not even have to take time off to write his ideas down; the reporters did that for him. Of course the reporters could not always be counted on to do the job correctly, but, being

an experienced journalist himself, Zola could turn this difficulty into an advantage: if he did not like the look of what a reporter said he said, he could declare that he had been misquoted. (And misquoted he sometimes was: our Volume VIII will contain a letter he wrote in 1887 to the novelist Paul Adam, in which he says, in effect: my dear colleague, I am not responsible for the announcement of your death which was attributed to me in this morning's edition of the *Gaulois*) Still, more often than not, the report of the interview gave a reasonably accurate account of his opinion, though probably not of his exact words. If the reporter did get it wrong, and the error was serious, Zola could have it corrected in a subsequent issue by writing a letter to the paper concerned; if the reporter got it right, Zola would sometimes send him a polite letter to thank him for getting it right. Thus his letters put us on the trail of these interviews; and as we track them down, day by day, in our ACRPP microfilms, we realize how extraordinarily numerous they were; and we recognize that, in spite of his occasional disclaimers, these interviews were quite as influential as the articles he wrote before his so-called "retirement" from journalism.

Of course we also recognize that this information must be published. So it is that two of my colleagues have recently brought out an important post-1881 addition to the "Zola *journaliste*" series, principally listing the interviews that were reported in the major Parisian dailies from 1882 to his death in 1902.⁸

These interviews are harder for researchers to find in the microfilms than the pre-1881 articles. The articles were always followed (and sometimes also preceded) by the author's name printed in large, heavy capitals, whereas the interviews are most often signed, if they are signed at all, by an obscure reporter whose name merits and gets no such special treatment. Consequently, the latest volume of *Zola journaliste*, valuable as it is, is even more incomplete than the preceding bibliographies, and we expect that it will be followed by a lengthy series of supplements, as we discover more of these interviews and collect more information about Zola's presence in the press, day by day, constantly putting pressure on the opinions and attitudes of the readers in the Belle Époque.

Let me add a post-scriptum about the use we make of another element of our archives, and which has led to another kind of exercise in learning and teaching. Everyone knows, because Zola insisted heavily on this himself, that, like Flaubert before him (and we may add, like many twentieth-century novelists after him), he believed that it was the novelist's responsibility to find out as much as he could about the various social milieux that were the settings of his fictions; and he regularly spent weeks or months gathering this kind of information before he started writing a novel. Conversations with experts, voluminous readings, visits to the places concerned, all accompanied by copious note-taking, in more or less telegraphic style—all this advance work resulted for every novel in a "preparatory dossier" consisting of hundreds of manuscript

8 Dolorès A. Signori and Dorothy E. Speirs, *Émile Zola dans la presse parisienne 1882-1902* (Toronto: Zola Research Program, 1985).

pages. Most, but not all, of these manuscripts were given to the National Library's Manuscript Department by his wife after his death. However, she chose to give the dossiers for the *Three Cities* trilogy to the Méjanes Library in Aix-en-Provence, where Zola spent the years of his youth in the company of Cézanne. Only in the Toronto archives can a researcher find *all* the dossiers, in microfilm form.

Recent scholarship has been very interested in exploring these manuscripts, not only for the information they contain about the genesis of the novels, but in their own right as sources of information about the different areas of Belle Epoque society in which Zola set the novels. In the opinion of some twentieth-century readers, the dossiers are quite as fascinating as the fictions. They are beginning to be published by our French colleagues. Colette Becker has edited the entire *Germinal* dossier,⁹ and Henri Mitterand has published selections from the dossiers of twelve other novels.¹⁰ It now seems probable, not to say necessary, that all of this manuscript material will be published, for this is information that surely must be passed on. If the publication of all of it in volume form is not economically feasible, probably new methods of information retrieval and distribution will be used. Similar technologies may need to be exploited for another project we have in mind: the dissemination of information about the more than 25,000 letters received by Zola and conserved in our archives.

One last post-scriptum. I have made scarcely any mention of Zola's intervention in the Dreyfus affair, an intervention which most historians agree was decisive. My excuse for this omission is that the subject is enormous and demands to be studied on a large scale. Of course it again involves Zola the journalist and the essential rôle that he played in the press from 1898 on—a rôle for which he had been, without knowing it, thoroughly preparing himself in the earlier stages of his journalistic career. Zola's exploitation of the media to expose the Dreyfus cover-up has clear parallels, in late twentieth-century American history, with the Watergate scandal.

There are many studies already published about the Dreyfus affair in general.¹¹ I believe that an important study remains to be written about how one intelligent and courageous journalist of the Belle Epoque, who was also a novelist, and whose name was Émile Zola, used the media, day by day, to arouse the conscience of a people—indeed, if we accept the phrase of his former adversary Anatole France, the conscience of humanity. Anyone who is interested in getting and passing on information about this subject will find abundant material among the letters, manuscripts and microfilms in the Toronto archives of the Zola Research Program.

⁹ Émile Zola, *La Fabrique de "Germinal"* (Paris: SEDES, 1986).

¹⁰ Émile Zola, *Carnets d'enquêtes, une ethnographie inédite de la France* (Paris: Plon, 1986).

¹¹ For a recent bibliography, see Norman L. Kleebatt, ed., *The Dreyfus Affair, art, truth and justice* (Berkeley: University of California Press, 1987), pp. 311–15.



ACADEMY III

Academy of the Sciences

SYMPOSIUM:
PUBLIC AWARENESS OF SCIENCE



The Role of a Scientist in Modern Society: Performer and Critic[†]

IN ADDRESSING a symposium on the urgent need for a better awareness of science in society, and the role of the scientist in accomplishing this public goal, it seems wise to begin at the root of the real problem and to state the problem in forceful terms. There has been a significant shift in public attitudes towards science and scientists over the past two decades. Scientists are being called to account, asked to deliver, forced to compete for society's limited resources at the very time when research costs and research opportunities soar. Economic and social imperatives exacerbate the strategies of "normal science." What is normal?

EARLY MORNING REFLECTIONS OF A SCIENTIST AS PERFORMER

C'est la raison que ce matin je voudrais parler sur le sujet des sciences dans la vie intellectuelle, la recherche et les chercheurs, le rôle du secteur privé, les idées et les défis internationales. C'est à dire, je vous propose les questions et les défis pour nous, les scolaires en physique, chimie, mathématique, les sciences de la terre, biologie et biochimie, les sciences médicales, et les sciences appliquées. I also face the duality of these challenges, as a scientist, and as Chairman of the Science Council of Canada. The brilliant insight of the midnight hour is often quenched in the cool reality of dawn. Thus in trying to address the role of the scientist today, to assist in creating the debate, I realized that there are, at the very least three perspectives:

* Chairman, Science Council of Canada, and Professor of Chemistry and Physics, University of Toronto.

[†] Presented at the symposium, "Public Awareness of Science," Université Laval, 5 June, 1989.

- 1 The roles—indeed, the *multiplicity of roles* required of scientists today.
- 2 The script—the *meaning of science* today, the international, interdisciplinary, intersector scientific enterprise.
- 3 The timing—the implications behind the word “today” as a cultural context for research in a climate of international competitiveness.

Today is not yesterday, nor does it imply a linear extension to tomorrow. Indeed, grasping the *timeliness* of our own research activity *and* how we couple into society and the perceived needs of society may be the biggest challenge of all to the scientist. It is this point of *timeliness* that determines the relative value of the debates and the silences in terms of public and political response. To understand one's role as a scientist, and that of a scientist who opened the laboratory door to the broader issues of science within society, let me reflect on just what a scientist must do.

In my laser laboratories at the University of Toronto, my graduate students and post-doctoral fellows have put up a new sign on the inside of the door leading to the corridor. “Danger: Enter the Real World at Your Own Risk.” There is a lot of unwitting truth in that statement. Just in whose world does the scientist work and explore? To whom is the scientist responsible?

Ultimately, we are responsible to society. Scientists are sponsored thinkers. Perhaps this change in public attitudes towards scientists and science is merely a small shift in a long, oscillatory response, reminiscent of a travelling wave that moves forward but varies in amplitude and frequency across the centuries. However, the public's enthusiastic and uncritical wonder of science, avidly fostered after World War II in the 1950s and 1960s by the discovery, invention and excitement of transistors, computers, sputnik, lasers, and DNA, has now given way to mistrust. In many quarters the public attitudes are ones of active distrust. Motives, accomplishments, and consequences can be misread. For example, consider the pervasive use of computers in our daily lives in contrast to personal concerns on computational illiteracy or invasion of privacy; or the wonders of Neptune and Triton in space exploration contrasting with space wars and SDI; or medical breakthroughs, such as identifying the cystic fibrosis gene, in contrast to AIDS and genetic engineering. Nuclear energy, hydrofluorocarbon pollution, and toxic dumps have led to recent emotional outbursts far stronger than rational responses, although scientific concern for the public good in these areas is decades old.

These front-page issues have led the public to exhibit responses ranging from apathy and ignorance to fear of the unknown and active opposition. The tension between medical researchers and animal-rights proponents has been a clear and often violent example of the destructiveness of the last reaction. The international implications attract world-wide media attention. Of course, these responses are extreme, and an ever-increasing number of thoughtful people, in all walks of life, finds science an immensely challenging and reliable cultural interest. Alas, the latter are still far too few to support publicly, in a significant

manner, what the scientist both needs and wants: freedom of time and adequate resources.

The support of financial and human resources to follow up ideas, intuitive concepts, theories, and experiments has been a challenge since the time of Plato. Like the artists of the Renaissance, individually and collectively scientists need patronage. But the problem in Canada today, indeed world-wide, is that the sponsors seem a little deaf, the patrons have other pressing priorities, and the public seems distinctly unappreciative of the rewards of scientific discovery and the level of the scientists' needs and wants. To some, the scientific priesthood deserves its fate. To others, the golden age of science is imperiled by short-term commercial imperatives. To most, the daily newspapers and thirty-second media clips recount tale after tale of apparent technological disasters. The word "chemical" becomes a synonym for toxic.

In fact, these tragic events occurred mostly as a result of errors in human judgment, bad management, and bad plumbing. However, some are real accidents for which no statistical predictions can ever give retrospective comfort. Now I am approaching the key issue. *The public understands neither science, nor risk, nor the nature of evidence to assess that risk.*

The public decision-makers sense the public mood and ambivalence. Medical practitioners wisely relabel nuclear magnetic resonance as magnetic resonance imaging (MRI), because of the word "nuclear." This science of the 1940s, for which Nobel Prizes were awarded, has over the decades spun-off technologically precise but non-invasive diagnostic techniques that greatly relieve human suffering and uncertainty. MRI is now in competition with X-ray machines and invasive exploratory surgery. The benefits already are compelling. Who tells the good news? Who is seen to be objective on the real benefits of this science to society?

There have been debates on the value and values of the sciences but there also have been silences. Where were the scientists when the sponsors began to be uneasy? Are we, as scientists, going to speak responsibly or (as many in the public and private sector suspect) hold out the bowl and mimic *Oliver Twist* in asking for more? To answer this it is essential to realize that, in society at large, there are several microclimates and stereotypes at work. To many in government, scientists are least able to present a balanced position, in a climate of conflicting priorities and demands on limited budgets. To those in the private sector, university scientists are undisciplined in achieving goals. Furthermore, the scientists in government laboratories are seen by some policy makers as surrogates for scientists in university research, without the rigour of competition and renewal that comes from peer-reviewed proposals and the constant assessment and challenges of graduate and undergraduate teaching. This point is made because in Canada, at this time, there appears to be a duplication and a confusion of the roles of scientists in government and those in university laboratories, and of the roles of scientists in universities and their increasing interactions with their private sector colleagues and sponsors. In contrast, the

problem with the private sector R&D community is quite simply one of size and investment in R&D. There is far too little innovation and real R&D performed by certain industrial sectors in Canada.

Just who is in charge of doing what? If the scientists have not developed a shared vision of their respective roles, communication will be fraught with mixed signals to the public, to the patron. These are questions pertaining to the role of a scientist that began the very day individuals began to experiment, to ask questions, to speculate and test out their ideas. Whenever one asks for the first time, "Why? . . . or how? . . . or why not?" science gains a practitioner through curiosity. That is why so often one hears the phrase "curiosity-based science." However, curiosity should be accompanied by a rigour and intellectual discipline born from concern with evidence. It seems to me that the *role of a scientist* can itself be divided into two parts, with a searching or curiosity function in each.

Let me propose a new law: $V = IR$ for progress in society. The potential (V) is linked to the strength of the current (I) of events and ideas and the resistance (R) of society, like Ohm's Law. There are both a.c. and d.c. contributions for scientists, as discoverers and carriers of information.

- 1 There is the role to play in the time-honoured and *time-independent* search for truths. This is the characteristic inquiry of science underlining the research and scholarly teaching function. This is the d.c. function, slowly varying over the ages.
- 2 There is the role to play in the *time-dependent* challenges, which must be met according to society's urgent needs. This is reminiscent of the a.c. function, whose peak amplitude and frequency are driven by external events.

Naturally there is a long-term scale, since scientists and engineers are judged by subsequent generations and by society at large. But to increase awareness today, we must foster a communication plan for both the *time-independent* (d.c.) and *time-dependent* (a.c.) activity to the public.

We need scientists in Canada who speak out clearly and compellingly about the d.c./a.c. mix. There is a legitimate proactive role for a scientist: to remind society of the intrinsic cultural, intellectual, and economic value of scientific know-how. A scientist with powerful ideas who speaks in simple language can move many. Perhaps the hardest challenge of all is to be the *communicator*, and survive the subtle barbs of one's colleagues, who assume communication has been an easy way to avoid doing research. Your peers scoff after a popular talk or a newspaper article and say "Really, you shouldn't waste time with the media. Anyway, you were rather simplistic in describing that reaction. I would have said (more accurately) that the *poincaré* intersection leads to oscillations in the coefficients of the wave functions, and that is why the transition integral is zero near 600 nm." Translation to the public can be very economical: "This material is colourless!" Language speaks. Learning to speak in simple, but not simplistic, terms is a challenge for all of us as scientists.

Let us examine the *time-independent* truths perspective, which underlies research, creativity, imagination. This I have called the d.c. component of our role.

Scientists and the "communication" of science

In research we must build on our strength and excellence. These qualities, individually and collectively, are manifest in different ways. If I reflect on being a scientist, on the inside of the laboratory door, then the time-independent issue is clear. The role of the scientist is to discover and apply the law of nature.

How is this mandate translated into concrete activity? To propose ideas requires creativity and curiosity; to discover facts demands observation and empiricism; to interpret data needs a theoretical framework, on which the fabric of ideas and observations is woven. To communicate results is the final task. Such communication today occurs in many forms: addresses, radio, TV, learned journals, popular magazines, photographs, and even videos. Built into the traditional communication channels is the vital prior step of peer review, which is why the medium of press conferences provokes criticism if the learned-journal or peer-review stage has been circumvented. The media response to "cold fusion" was a perfect example of how confused facts and speculation can become when viewed through the optics of the evening news editor who needs headlines. Yet, in retrospect, when claims were withdrawn, some facts substantiated and others shown to be incorrect, we watched the scientific method move into full gear around the world. The public also saw that scientists can change their views objectively, based on evidence and debate.

Discovery, intellectual adventure, learning to shape simple from complex questions, discerning some answers, living with the unknown and accepting uncertainty with equanimity—these are some of the personal experiences that influence both the individual scientist and the tempo of scientific discovery over the decades. We must share this human side if the public is ever to understand better the nature of evidence and risk.

Science is also as international in its molecular theatre as it is historical in its roots and futuristic in its visions and goals. As I have stated elsewhere, goals are visions with deadlines. Each of us has research goals. Some indeed have great visions that do change the way we all see the natural world. We must share these visions too.

Western Science has roots that grew from the recorded cultures of the twin Mediterranean hubs of Athens and Alexandria. Their respective emphasis on theory and empiricism served us well as an example of how progress requires both, in close contact. Questions of uncertainty were as familiar to Plato as were the debates on whether or not basic or applied, theoretical or practical, generalist or specialist were preferable for the education of Greek youths. While science intrigues and can lead to intrigues, as Samuel Taylor Coleridge or Galileo might have told us, perhaps Leonardo da Vinci best embodied all the qualities of the role of a scientist in the Renaissance world. The past hundred years have been extraordinary, yet the past global one hundred hours of

research results will have eclipsed them in depth of complexity. Science has become international business. There are no gentlemen practitioners at work, except perhaps in disguise. The centre of gravity of science, research, and development moves like a spotlight around our civilized globe, and at the present time highlights Asia. Enormous effort in basic research is evident in the Pacific Rim countries, particularly in Japan. Again while the focus is on creativity and imagination, efforts are not divorced from the greater cultural awareness of the two other perspectives—the meaning of science today, and the timeliness of the overall research enterprise in society.

Let us therefore examine the second or a.c., component. This is the scientist's role in society that addresses the *time-dependent* challenges. We must share our ideas and results with more than just a professional elite.

Scientists and the "business" of science

In an ideal society, science would be a part of our culture. Research in all academic disciplines would be seen as a tithe for enlightenment. Citizens in society would see science as an activity worthy of support and of the right kind of intellectual pride and passion. However, like atoms and molecules, we are not independent particles. We live in a real, not ideal world. Remember the sign on the laboratory door: "Real World—Enter at Your Own Risk." The facts are not unfamiliar. To accomplish an intellectual goal, resources are required: financial, human, and above all, time.

To have an idea is one step, but to do a project effectively, to give life to that idea, is quite another. Gaining resources requires a priority in allocation among competing demands of society, particularly in the difficult deficit situation we in Canada now see, after earlier years of economic surplus. Gaining top priority means putting forward compelling arguments. More of the same is *not* enough for the politician or the public or the policy makers. Like it or not, we scientists are sponsored thinkers. Our patron is not convinced of the value of our intrinsic worth, or of our spending time on apparently esoteric whims, when the economic underpinnings of yesterday's wealth creation now result in record trade deficits. We have to make the case a fresh way.

First, where does all the time go? In a university milieu, the teaching responsibilities also have major priority. Related to the weekly lecturing activities are hours of preparation, undergraduate tutorials, curriculum committees, admissions and standards agreements, examinations, scholarship ranking, term papers, academic counselling, and just plain talking to the students in the teaching laboratories. The teaching component associated with research is, in practical terms, still not recognized. Yet it is all of the above for the graduate students, with one important addition and difference. In learning to shape questions and seek answers, undergraduates assume, not unreasonably, that there is an answer to find. Undertaking research, when no quick answers may be there to find, requires a maturity built upon a significant shift in attitudes.

Scientific research is good detective work. But if one is not careful in shaping

the questions, one can conclude by solving the wrong—or worse still—an irrelevant crime. Thus considerable time is needed to prepare research students, and for them to acquire the attitudes, hone the questions, and deepen their intellectual skills. They learn to debate, assess the evidence, and carefully draw conclusions, before new experiments or theoretical calculations can even begin.

Imposing on the already limited time available are responsibilities entailed by academic citizenship, such as hiring, promotion and awards committees, appeal committees, committees running departmental facilities such as electronic or mechanical workshops, and colloquia and regular seminars given by external speakers.

Administrative responsibilities associated with running a research group, superimposed on the above, endow the active scientist or engineer with a degree of intellectual business acumen, whether he or she wishes it or not. In days of pay equity, fringe benefits, overheads, graduate student and staff unions, patent protection issues, animal rights, occupational health and safety standards, running a research group is surprisingly close to running a small business. The return on investment must be constantly assessed, in units of dollars and time. The professor researcher raises the funds, carries the risks, tries hard to accomplish the goals with the resources available and ploughs back the intellectual profits for future ventures. And not all projects or businesses succeed. I would argue that a good research group bears the hallmarks of discipline, imagination, efficiency and flexibility that any successful creative business venture does in the private sector. Similarly, the pressures of time are severe, for some because of intellectual "market" competition, and for others as a result of high-internal motivation. We can develop a management style encompassing creativity, organization, and survival.

Under the time-dependent economic challenges, the scientist today is being asked to do more. We are urged daily to take on new university-industry collaborative projects, to communicate more widely with the public, to be more relevant. I can only conclude as critic that we have failed as contemporary scientists to communicate effectively what we are already doing well. Or have we failed to accomplish anything well enough to communicate to the public at large? If the lines of communication were open and effective, the public and the politicians might wonder just when in these voluntary, sixty-hour weeks the scientists and engineers can find time and energy to do more! I do not mean this to be a self-serving statement. We as scientists *must* meet this a.c. challenge—but how?

Let me as critic pose this question another way. Perhaps the scientists and engineers are not spending enough time on quality research because of the increasing burden of peripheral or mediocre-value activities. The time-dependent a.c. challenges then become explicitly linked to the following policy issues, which I believe must be resolved soon if the performers are to be extricated from a temporal grid-lock in research and scholarly productivity.

"The old order changeth, yielding place to new," Tennyson said. In modern times, it seems the old order changeth but the burden does not go away. We build administrative pyramids; seldom do we erase or renovate old structures, keeping merely a photograph for the historical record. There are no incentives to do otherwise. We need to transform our infrastructure to help the R&D community meet the a.c. challenge, without destroying the d.c. role, for that is our buffer against the unexpectedness of the future.

The policy issues I refer to were those of the old order. In the 1960s, grants-in-aid were readily supplemented by healthy infrastructure budgets, plenty of capital for equipment, and new or renovated buildings could be anticipated. The roles of the various institutions in teaching and research were clearly delineated. Professors seemed to have more control over time because less time was spent on raising funds and "running the business."

Today, the grant-in-aid policy should be replaced, I believe, with full-cost funding, on a project basis, including indirect costs and overheads. Advanced research endeavours are not a social policy tool but an intellectual and economic development policy tool. A move towards project and program decision making, as opposed to discipline decisions only, would broaden research horizons to help meet these a.c. challenges. Unless full-cost funding is set as a goal to accomplish over the next five years, the scientists and engineers in the universities of this country are rapidly moving into an impossible business situation, commonly known as bankruptcy. Moreover, the consequences of intellectual bankruptcy cannot be wiped off the books overnight, like Third-World debt through foreign aid. A decade or two may be needed to recover. Furthermore, outdated and truly obsolete equipment in one university laboratory is to be contrasted with the new, unopened boxes of the newer model equipment left for over a year in another university corridor, because no one knew (or was motivated enough) to get the facility up. Merit, not geography, should be the basis of decisions. We do have merit across the country. The desirable differences between public and private sectors, government and university laboratories, various university and college institutions, even between faculties, should be a positive factor, not a negative, levelling-down one. Our research policy cannot have twin and competing developmental and social objectives. This must be a key point in an awareness campaign. *We cannot all do everything.*

Stipends for summer research are a great incentive for most parts of the Western world. Unscholarly tensions within academic communities might well be lessened if salary policies recognized that some professors actually do research all summer, and some frankly do not. Contracting or consulting stipends help bring university-industry projects to fruition and completion. The public, of course, are all convinced that professors spend most of their summer time in bucolic comfort, arguing over esoteric, polysyllabic conundrums at the cottage. Clearly scientists, taken within that professorial community, are hostages of their own dilettantes and the cartoon image of white-coated, whimsical champions of Scrabble and second-order differential equations.

Thus we reinforce by our silences the suspicions of the policy makers, who are also members of the public, about scientists, professors, and the full academic community. In the context of the economic challenges we face, silence is dangerous. If scientists and engineers do not speak out and clearly articulate *why* equipment funds are urgently needed, *why* summers are research time, *why* R&D tax credits for precompetitive university-industry research consortia are vitally needed, or *why* the time has arrived for full-cost funding, no one else will argue for them. Attracting more young men and women into science should be a top educational priority. First-class teaching and exposure to a good research summer will trigger their all-important motivation.

The attitudes of the old order will determine the future policy directions, unless the policy is also shaped by the voice of the responsible scientists who accept the d.c. role, the a.c. challenge, and show leadership. But remember, the old policies were not necessarily wrong. The world has changed dramatically since the 1960s. The competition for resources is heated. We cannot be silent. Nor can we assume that the policies our generation establishes by 1990 will be necessarily the wisest by the year 2010. The older order must evolve again.

There are some in the scientific community who would strongly reject any but the time-independent d.c. role for scientists. To my mind, the reason we have to accept and meet the second a.c. role is not just a question of responding to urgent national needs. It is a matter of survival. What are the issues that underscore the enormous global trading and technology challenges we face? There are many, but few of them are new to Canada. In 1916, the original NRC was mandated to be the national advisory council on industry and technology, because the leaders of the day saw the immense technological deficit that was rapidly accumulating in an industrial landscape solely reliant on the resource base. Technology was a key to innovation. The arguments are the same in 1989. Today, the scientists and engineers at NRC are being reminded of that original and still substantive mandate, as debates and discussions swirl within and without its laboratory doors, on technology transfer, industrial assistance, and NRC's role in basic research.

Meanwhile, in response to targeted NSERC, MRC and SSHRC programs, university-industry liaisons are blossoming across Canada. Such interactions are neither new nor necessarily in contradistinction to creativity. In 1910, Lord Rutherford consulted widely at Cambridge with industry on "practical matters." In 1989, embedded in Silicon Valley, the Stanford University faculty wins Nobel Prizes, and runs spin-off firms. How does one take an idea from the laboratory to the market place, through the various stages of development, to produce a tradeable good or service? What are the criteria for success? Is the real secret the people, the champions involved? Much has been written on this topic. I wish more were accomplished. Quite clearly there has to be a continuous technology transfer and diffusion. Too many of our programs are substitutes for the real thing. "Diffusion" is in some ways an ambivalent word

because it refers to a "random-walk" process. Fortunately, that is a reasonable description of how discoveries and events are linked together, but the value of serendipity is not easy to communicate to society. For technology transfer to work a clear goal must be stated at the outset, but several pathways may be possible. None will be productive without committed people.

For the moment, it is evident that Canada needs all the brain power possible to kick-start an economic engine that must be revived through technology and maintained through smart technology management. A successful technologically based industry will create more jobs than in turn will create a demand for younger scientists and engineers from our research laboratories, as well as a demand for other sectors of society such as the service industries. The fundamental and applied research base can be supported and must be supported to ensure that the kick-start is substantive and sustained. We have no choice but to play our active part in these events.

The role of the scientist is no longer singular or distinctively different from that of others in society who must contribute towards the national good. Arguments about the relative merits of being a scientist or an inventor are irrelevant in this larger scene. Canada needs both. But if we confuse the microclimate of incentives for one with the conditions to foster the other, we will have dampened both sets of spirits, which are each creative but contribute in different ways. Often the scientist is critical of the inventor and vice versa, in a manner reminiscent of the age-old debate on fundamental versus applied or targeted science. Yet different disciplines have different hierarchical values linked to applied or basic research. What is an applied problem to a mathematician is fundamental to a physicist; an applied problem to a biochemist is fundamental to a medical scientist. Yesterday's basic research is today's engineering text. It is time we changed the debate and stopped policy-makers from believing that there can be a choice, as opposed to merely developing shift in emphasis.

The important fact is the *significance* of the question being asked. It is a question of questions: Who shapes, who answers, who applies the answer to the question? If a question is irrelevant to the problem in hand, or much smaller in investment value than another, why spend valuable time focusing on that question? Of course, following that approach too literally leads the trap of rejecting all but orthodox thinking. I have said elsewhere, the orthodoxy of telling time with sundials in 3000 B.C. led to the most convoluted and complex *nonlinear* systems of oval gears in mechanical clocks. Then Newton suddenly shifted the paradigm by stating the *linear* relationship between velocity, time and distance, $d = vt$. The point is, that while solving research questions may still be the goal, the paradigm or the environment in which we solve them may be quite different in the future. Some of the United States' most productive and creative laboratories have been in industry: the questions shaped were within the overall mission, and the freedom to pursue the solutions the product of wise management. Perhaps the research paradigms *have* shifted already for the

1990s, as the United States, Australia, and Europe all struggle on the same competitiveness agenda as Canada, pitted against challenges from the Pacific Rim in particular.

If the research paradigm has shifted, one fact remains the same. Government cannot pick winners. Climates must be created by government policy in which winners can emerge. Building on strength is commonsense, but selectivity based on criteria other than international peer review will lead to problems. Excellence (although an over-used word today) is what we all should strive to achieve or to promote. Why not seek excellence *and* relevance in the a.c. role? There is little relevance in mediocre or poor results.

An idea or product of quality, like a creative thought, sparkles with life. Our challenge as scientists and engineers is to be excellent in what we do. Our role is to couple intellectual curiosity and rigour of performance into good citizenship, and to communicate our contributions clearly to the public, our patron. Whether as scientists or artists, timeliness is part of our leadership and boldness should fashion our reach. We are responsible for the articulate communication of the imperatives of research and development as long-term investment equity for the future. Research and development are necessary but not sufficient conditions for building our nation into a twenty-first century mode—without effective public awareness of science and technology, we will not move past the necessary into coping with the sufficient. Nor will you or I experience more tranquil reflections in the early dawn hours as a scientist, as a decision-maker, as a citizen, as a student caught up in time and yet responsible for change.



The Popular Perception of Science in North America[†]

SCIENCE was generally respected in the industrialized countries between the Enlightenment and World War II. It even became glamorous in the wake of the nuclear bomb; its prestige peaked in 1957 when Sputnik was launched, and it remained high in the public esteem during a few more years. However, the public image of science has altered dramatically since the late 1960s. To many it appears as the villain who is to be blamed for the arms race, the degradation of the environment, and unemployment. A serious consequence of this change of attitude is the sharp decline, in recent years, of the enrolment of North Americans, Britons, and Russians in scientific careers.

Scientists and a few others know of course that the anti-science crowd is wrong, that the people who try to understand the world must not be blamed for the sins of those who attempt to dominate or even destroy it. But we are here concerned not with science but with the way it is perceived by the layman and particularly by the young. We must try and find out what altered the earlier favourable public perception of science. Only thus may we discover effective proposals for correcting misperceptions before the scientific enterprise is shut down from distrust or lack of interest.

SCIENTIFIC ILLITERACY IN THE AGE OF SCIENCE

The very first thing we must understand, if we are to evaluate correctly the current state of scientific literacy, is that the traditional respect for science was not a result of widespread acquaintance with scientific findings, much less with the scientific approach. Science used to be respected from afar, just as now it is often reviled from a distance. The change has been not so much in knowledge as

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† Presented at the symposium "Public Awareness of Science," Université Laval, 5 June, 1989.

in evaluation. The public knowledge of science has always been rather dismal. The recent change in values has only worsened a bad situation.

How bad the present situation is in the United States and the United Kingdom was revealed by a recent survey that showed that two-thirds of British adults believe that the sun revolves around the earth, 50% of American adults reject evolution, and 88% believe that astrology is a science. (See Culliton 1989.) Another survey, conducted by the International Association for the Evaluation of Educational Achievement among fourteen-year old students in seventeen countries, found that the United States ranks fifteenth in science achievement. Worse, since 1970 the U.S. dropped from the seventh rank to third from the bottom. (Hirsch 1989.)

I do not know of any Canadian survey of scientific literacy. However the U.S. Educational Testing Service recently conducted a study of scientific and mathematical achievement on thirteen-year old students in four Canadian provinces and five countries—the United States, the United Kingdom, Spain, Ireland, and South Korea. (See Byrne 1989.) The Koreans were first in both categories and the Americans last. British Columbia shared with Korea the top level in science achievement. In mathematics, B.C., English-speaking New Brunswick, and the French and English speaking students of Québec were in the second four levels of achievement. But let us not crow, for our students were below the Japanese, Hungarians, Dutch, and Russians.

We look good by comparison with the United States only because the latter slipped down to the level of Thailand in mathematics and science education during the Reagan years. Things were quite different in the early 1960s when, in the wake of Sputnik, the U.S. government made an intensive and successful effort to upgrade science and mathematics teaching. And things will look far worse for Canada if our federal and provincial governments continue to pay more attention to constitutional and linguistic issues than to education. But few will notice any deterioration unless we have periodic national surveys of scientific literacy and of public attitudes towards science. Is it unrealistic to expect that the Royal Society of Canada will conduct or commission such surveys, to be used as tools by the science policy makers and the science education planners?

MISTAKING SCIENCE FOR TECHNOLOGY AND TECHNOLOGY FOR POWER

The layman is likely to believe that the nuclear plant, the computer, and the artificial respirator are scientific accomplishments. Some even believe that Einstein invented the nuclear bomb and the time-travel machine. And many have come to believe, in recent years, that, on the whole, science is evil and scientists are madmen intent on dominating the world. In short, there is a double misunderstanding, namely the mistaken equating of science with technology, and of the latter with industry and government.

Who is to blame for these *malentendus*? I submit that certain philosophers are the original sinners. For instance, Francis Bacon, the founder of modern empiricism, wished to replace the scholastic "philosophy of words" with what he called the "philosophy of works." Two centuries later Auguste Comte, the father of modern positivism, coined the famous slogan "*Savoir pour prévoir, prévoir pour pouvoir*." This pragmatic philosophy culminated with William James, who held that whatever has cash value is true. None of the three philosophers distinguished between science and technology, and neither understood that technology can be used for good or for evil.

Scientists know, of course, that science and technology are not the same: that only technologists design artifacts or processes likely to be of some practical utility. Scientists know that the aim of scientific research is to understand the world, not to master it. Still, when writing research grant proposals few scientists resist the temptation to promise substantial practical utility. Most of the time such claims are straight lies, told only to persuade bureaucrats who believe that science directly delivers industrial or political power. In any case, they contribute to the confusion between science and technology.

If scolded for telling such lies, a scientist is likely to argue that all means are legitimate to promote the advancement of knowledge. (Many physicists who disbelieve in the feasibility or the morality of the "star wars" project use the same excuse; they claim that money does not smell.) I submit that this Machiavellian strategy is morally and practically wrong. Morally because one should never do anything under false pretenses. Practically because bureaucrats and politicians are bound to find out, eventually, that the claims to practical utility are exaggerated, and because scientists have the duty to educate public servants, politicians, and tax-payers—they must teach them that science is a good in itself, and that demanding immediate practical usefulness amounts to clipping the wings of scientific imagination.

RELIGIOUS DOGMATISM

Dogmatism is of course the opposite of the scientific attitude, which is essentially creative and critical. Religious dogmatism is the greatest obstacle to the adoption of the scientific attitude, not only because it repudiates investigation but also because it asserts the existence of the supernatural which, by hypothesis, is beyond the reach of science. Science is naturalistic in the sense that it only studies concrete things and looks for laws, not miracles. Moreover, science does so without resorting to revelation or relying on indisputable authority. No wonder then that religious indoctrination at an early age is the most effective obstacle to the development of a scientific mentality.

To be sure, a scientific attitude may coexist with sincere religious belief—up to a point. A clash between the two is bound to occur in examinations of such questions as the evolution of the universe, the origin of life, the ancestry of man, the nature of mind, the origins of religions, and the existence of an after

life, which are precisely questions that most interest the laity. The answers to these questions determine whether one gets a scientific worldview or an unscientific one.

Evolution is a good test case. For a while, roughly between 1880 and 1960, it seemed as though most of the Christian churches had come to terms with evolutionary biology. Alas, this proved only to be a truce in the age-long warfare between religion and science. Admittedly, nowadays evolution is denied altogether only by the fundamentalists—and, in the United States, by roughly half of the adult population. But, however liberal, a religionist cannot admit that evolution has been a purely natural process; if consistent he must posit that the evolutionary process has been guided from above and that it has a definite purpose. In so doing he utterly distorts evolutionary biology. Likewise he may concede the usefulness of neuroscience to psychology, as long as he is allowed to view the brain as an instrument of the immaterial, immortal, and mysterious soul, all of which goes against the grain of physiological psychology and evolutionary biology. To generalize: the concern with salvaging religion leads inevitably to the mutilation of scientific research and the distortion of science teaching.

One consequence of the half-hearted acceptance of science among those who cling to traditional beliefs is that no religious organization has any difficulty in finding Nobel laureates to sponsor it. Another consequence is that science is often taught or believed side by side with religion, as if the two were conceptually compatible with one another. Alcock (1981, p. 30) found that over half of McGill University science students believe in God and in the immortal soul; only about 15 percent of them rejected these beliefs. Evidently most of our science students retain a nonscientific outlook even though they succeed in mastering some scientific ideas and techniques. No wonder they seldom if ever dare to tackle such controversial issues as evolution vs. creation, the mind-body problem, and the roots of the belief in the supernatural. As Wilhelm von Humboldt would have said, they receive *Unterricht* (instruction), not *Bildung* (formation).

BELIEF IN THE PARANORMAL

Despite the spectacular successes of science and the widespread use of gadgets, despite urbanization and compulsory education, belief in the paranormal is still rampant and does not seem to be weakening. In recent years the French, who used to pride themselves on being the heirs to Cartesian rationalism, have fallen massively the prey to magic, parapsychology, psychoanalysis, and strange combinations of these beliefs and practices.

North Americans, who are supposed to be hard-nosed, are no less gullible. In 1979 the Gallup organization released a report revealing that 51% of Canadian adults believe in extra-sensory perception. Worse, belief in the paranormal increases with education: acceptance runs at 26% among people with primary

education, 55% among high-school graduates, and 64% among university graduates. It would seem that our schools teach superstition. The same organization found last year that 58% of American teenagers believe in astrology, 50% in ESP, and 29% in witchcraft (*The Skeptical Inquirer* 13:244; [1989]). Alcock (1981, p. 25) found that about 80% of the psychology undergraduates at both McGill and York Universities believe in the paranormal. Professor Chatillon (1987) revealed that about 60% of his colleagues at the Université du Québec à Trois Rivières believe in telepathy, more than 50% in dowsing, and about 30% in the existence of persons who can make correct prophecies thanks to their paranormal abilities.

There is a whole industry of the paranormal, and many periodicals, TV stations and publishing houses are part of it. For example, thousands of newspapers the world over publish daily horoscopes and broadcast prophecies of astrologers and visions of mediums—but they never bother to tell us whether any such claims have been borne out by the facts. I myself have had three relevant encounters with the CBC. Once they asked me to suggest the names of people who might be interested in participating in a program on parapsychology. When I suggested a professor of psychology and a stage magician, the journalist became suspicious and asked whether these people were sceptics. Upon hearing my affirmative answer he exclaimed: "Ah, but you see, the public wants to believe; it does not want to listen to criticism!" The second time I was asked to appear for half an hour on the French CBC network, but my interviewer became increasingly nervous as I advanced my criticisms, so that fifteen minutes later she said: "Ça suffit, ça suffit. Merci, professeur." More recently the CBC "Citybeat" team interviewed me during one hour in my home asking my views on the alleged finding of a haunted house in Montreal and on belief in the paranormal in general. What they eventually broadcast was a rather long interview with the owners of the haunted home and with the exorcist they had summoned. (The main character, the ghost, did not volunteer to appear on the show.) All they broadcast of the interview with me was a final comment: "Of course, some people think that belief in ghosts is just part of junk culture."

Mercifully not all of the media are irresponsible when it comes to science and pseudoscience reporting. For one thing there are a few splendid TV science programs, such as *Nova* and *The Nature of Things*, as well as a number of occasional BBC series. However, their audiences are rather small compared with those for kitsch comedies. For another, a few influential newspapers and weeklies have no commerce with the occult and they—particularly the financial periodicals—usually provide reliable science reporting. For instance, *The Wall Street Journal* and *The Economist* have been duly cautious with regard to the alleged discovery of cold fusion last March. But they are only read by a minority, and few of their readers are likely to be youngsters who might be attracted to science. The bulk of the media overlooks science altogether or presents distorted views of it, while giving prominence to quacks. Even *Discover* magazine published full-page ads of the Church of Scientology.

In short, the popularity of beliefs in the paranormal, together with the revival of religious fundamentalism, point to a rebirth of magical thinking—a retreat from *die Entzäuberung der Welt*, which Max Weber regarded as the characteristic of modern culture.

THE COUNTERCULTURE

Formerly most intellectuals respected science even while not understanding much of it. More recently the bulk of the *intelligentsia* was willing to concede that science is the engine of modern intellectual culture. Nowadays a large number of self-styled intellectuals have enrolled in the counterculture movement, which has lately been rechristened the New Age Movement.

Most of the followers of this new fad reject science; others claim that oriental mysticism is the clue to modern science; and not a few of them reject rational argumentation altogether. Their catchwords are "insight," "holism," "spirit," "synergy," "natural," and "ecological"; a few venture to misuse the terms "information," "catastrophe," and, more recently, "chaos."

All these people claim that "official" culture is shallow and dead; that there are no mental disorders but only sick societies; that science is responsible for modern warfare and for environmental degradation. They sponsor chiropractors, homeopaths, acupuncturists, psychoanalysts, and even faith healers and witches. They buy magnetic belts, pendulums, crystals, and all kinds of gadgets supposed to diagnose or even cure diseases of all kinds, from common colds and backaches to cancer and AIDS. They form, in short, the clientèle of "alternative medicine" (*médecine douce*) and logotherapy.

Nor are half-baked intellectuals the only ones to criticize science for being rational, analytic, and reductionistic, and to advance untestable or even outright false speculations. For example, the eminent topologist René Thom claimed to have built a comprehensive biological theory enabling us to close down all biological laboratories. The successful inventor James E. Lovelock proposed the Gaia doctrine, according to which our planet is a living and self-regulating system capable of taking care of any amount of pollution. Sir John Eccles, who earned a Nobel Prize for his work in neuroscience, has claimed that the mind is an immaterial entity that acts on neurons via telekinesis. Eugene Wigner, another Nobel laureate, taught that all nuclear, atomic, and molecular processes are governed by the experimenter's mind. The Harvard political scientist Samuel Huntington writes pseudo-mathematical equations involving symbols standing for such variables as "social mobilization" and "social frustration," which he does not bother to define. Similarly Professor Robert Axelrod, the well known author of a theory of the evolution of norms, assigns numerical values to mathematically undefined variables such as "level of temptation" and "boldness," and feeds them to computers.

Furthermore, the academic community itself is not only a consumer of pseudoscience but also a producer of it. Not that pseudoscience is indistinguish-

able from science, as some philosophers claim. What happens is that specialists are likely to err when stepping out of their fields of expertise, particularly when they have an ideological axe to grind. If such deviations from the scientific attitude were critically examined within academe before they reached the popularizers and the philosophers, they would be relatively harmless. As it is, they contribute to unscientific world views such as the so-called New Age.

IRRATIONALIST PHILOSOPHY

The philosophical component of counterculture is irrationalism, i.e., the family of doctrines according to which reason is treacherous and even dangerous, whereas instinct, "gut feeling," faith, and intuition are reliable. The most extreme version of contemporary irrationalism is existentialism. Heidegger and his imitators are consistent irrationalists: they are unintelligible, to the point that Heidegger's writings are yet to be translated into German. Being a hermetic philosophy, or rather pseudophilosophy, existentialism could never have become popular. Because of its esotericism, all the public knows about existentialism is through Woody Allen's musings about being and death. Still, one thing is clear: that existentialists hate science and logic, this being one of the reasons for Heidegger's support of Nazism.

The attack of existentialism upon reason and science is fuzzy and clumsy and it sounds as if written in the twelfth century. There is another, far more subtle and efficient tactic: the anti-realist or subjectivist attack on science mounted in the 1960s and 1970s by the historian of science Thomas S. Kuhn and the philosopher of science Paul K. Feyerabend. These popular writers hold that there is no objective truth; that the scientist himself creates the facts; that scientific theories are accepted or rejected like fashions; that successive scientific views are mutually "incommensurable," i.e., not comparable with one another; that there are no definite criteria of theory acceptance; that every scientific revolution destroys all of the earlier acquisitions; and even, in the case of Feyerabend, that there is no difference between science on the one hand and pseudoscience and ideology on the other hand, e.g., between evolutionary biology and "creationist science," between psychology and parapsychology, between medicine and faith healing, or even between science and magic. Serious publications in the philosophy of science have been displaced by such books as *Against Method*, *The Social Construction of Reality*, *Ways of World Making*, *Farewell to Reason*, and *La science comme mythe*.

These irrationalist and subjectivist views of science have become popular, particularly among people who find scientific standards too high to meet, as well as among well-meaning young people who blame science for the global problems that threaten the survival of humankind. And yet it is easy to demolish such fashionable heterodoxies, e.g., by analyzing the way scientific theories are compared with one another and with experimental data. (See e.g., Bunge 1983.) But this is beside the point at this juncture. What matters in relation to

the problem of the public perception of science is that irrationalism and subjectivism not only distort the image of science but also contribute to its discredit. Moral: If you care for science do not overlook its philosophy.

THE SCHOOL

It is no news that our elementary and high schools do not teach enough science and that, what they do teach, they tend to teach in a dogmatic fashion. That is, they usually present science as a body of beliefs rather than as the process of questioning, conjecturing, and testing, and of discovering and inventing that it actually is. Moreover, when there is laboratory work at all, it is mostly of the "hands off" kind, and what "hands on" work there is, is usually performed blindly, without the requisite theoretical preparation. The results are boredom, the extinction of natural curiosity, and the inability to tackle new cognitive problems.

Part of the problem is of course that most science teachers have studied very little science and therefore do not feel at ease teaching it. (See e.g., Atkin 1983.) Being mostly graduates of faculties of education, they have spent years studying how to teach, design curricula, and manage schools, rather than becoming acquainted with science. How can they be expected to transmit an excitement that they themselves do not feel? (See e.g., Hirsch 1989.)

The typical science textbook does not help redress this situation. On the contrary, it is part of the problem, being usually bulky and dull, often wrong, seldom relevant to problems encountered in real life or fun to read. In particular the U.S. textbook industry, unlike its British counterpart, excels in the production of bulky (hence expensive) and dull textbooks. But they are so well promoted that they regularly are accepted over their better rivals, particularly those sponsored in the pre-Reagan days, by the federal government or by professional organizations. For example, in the 1970s only 5% of the U.S. school districts surveyed used federally funded mathematics materials; and no single federally sponsored textbook in the natural sciences was in use in more than 25% of the districts surveyed (Jackson 1983).

As a consequence of poor professional preparation, few elementary and high-school science teachers in North America have adopted the scientific attitude. Worse, the little science they have learned has often been insufficient to wean them from traditional creeds and to immunize them to fashionable superstitions. For example, a recent survey of beliefs of U.S. high-school biology teachers revealed that 34% believe that Adam and Eve were the first human beings and were created by God; 20% believe that the Bible is an authoritative and reliable source of information with respect to such scientific issues as the age of the earth and the origin of life; 22% believe that the Bible's account of creation should be taught in public schools as an explanation of origins; and 29% believe that Satan is an actual person working in the world

today (Eve & Dunn 1989). It would be interesting to make a similar survey in Canada, particularly in Québec and in the Prairies.

Belief in the paranormal is no less widespread among science teachers. Alcock (1981, p. 25) found that only about 30% of the professors of natural and social science at York University were sceptical about ESP; and he found that only 8% of the McGill science undergraduates (third-year courses) were sceptical. It would not be surprising if we found similar results among elementary school teachers. When my daughter attended Grade Three at a reputable private school in Montreal, most of the books in the classroom library were about ESP, the Bermuda triangle, and the like. In ten years she has taken more courses in so-called religious and moral education than in physics or chemistry. And, of course, knowledge of Québec history and geography is deemed far more important than knowledge of world history and geography, not to speak of natural science.

In short, our elementary and high schools do not offer adequate science teaching. It is not that they have failed to do so for lack of funds, materials, or personnel; they never tried, presumably because the educational authorities have yet to learn that science is the nucleus and engine of contemporary intellectual culture.

WHAT CAN BE DONE TO IMPROVE THE POPULAR PERCEPTION OF SCIENCE?

What can be done to correct the popular misperception of science? Only one thing can work, namely improving the teaching of science and of the history and philosophy of science. This can and must be done on all three school levels and also in the media and in the publishing industry.

We need a radical school reform that may bring our schools up to the level of the best European and Far Eastern schools. This can be done through better teacher training, better teaching materials—in particular laboratories, science kits, and textbooks—and twice as many hours per week devoted to science and mathematics in all elementary and high schools.

We will not get better science teachers from the existing faculties of education and teachers' colleges, for these are usually bastions of conservatism and they stress teaching methods at the expense of content. Moreover some of them, such as the McGill Faculty of Education, do not even offer a B.ED. in Science or in Mathematics. Instead, they offer programs in Religion (Protestant, Catholic, and Jewish), French as a Second Language, English as a Second Language, Physical Education, Home Economics, etc. They have not kept up with the times.

If we want to upgrade the teaching of science and mathematics we must bypass the faculties of education and teachers' colleges, and encourage schools to hire people competent to teach those subjects, i.e. graduates in mathematics,

science, or engineering. These individuals may initially lack didactic ability, but they will get it with practice. At least they will know what they are talking about and, when asked questions they do not know how to answer, they will have the courage to admit ignorance, and the willingness and competence to find the answers.

The science textbooks can only be improved by having scientists write them. There are a few imitable paragons in this field, such as the British, Mexican, and Cuban elementary science textbooks. The Mexican experiment is particularly interesting. Nearly two decades ago the Mexican Ministry of Education commissioned some of the very best mathematicians, natural scientists, and social scientists in the country to write elementary textbooks. These turned out to be excellent: not only accurate but also clear and attractive. The government published and distributed them freely among the school population. Regrettably, this effort was soon frustrated by the dearth of qualified teachers, the lack of facilities, and the overcrowding of the classrooms. No reform can be successful if sectoral; every component of the system has got to be reformed. We can envisage and implement such reform. Why don't we?

As for the science coverage in newspapers, magazines, and TV and radio shows, the way to improve it is to upgrade the profession of scientific journalism. The scientific reporter must be better educated and paid. We do not have enough scientific journalism in Canada. True, there is an excellent popular science magazine, *Québec science*, but it is provincial. And *Le devoir* has recently hired a good scientific journalist, but he is only allotted one page per week. The *Montréal Gazette*, too, has its weekly science page, but it is borrowed almost entirely from news agencies from across the border. There seems to be no national science magazine addressed to elementary and high school teachers and pupils. In contrast, the Colombian government publishes *CIMPEC*, an excellent monthly addressed to that audience. Could the Science Council of Canada do something similar?

Another thing that can and must be done to improve the public image of science is to multiply the number of science centres and museums. We need one centre in every major Canadian city, so that it may attract thousands of visitors who can activate experiments, watch science shows, and attend lectures and courses on topical scientific matters. Toronto and Ottawa have their own popular science museums, and a private group in Montréal is planning a Carrefour des sciences, techniques et industries. But we need many more such centres and all of them should feature new exhibits every year, so as to draw large crowds.

Finally, the sciences of science—the history, sociology and philosophy of science—should be upgraded as well for, after all, they are the disciplines that fashion the scholarly images of science. Three and a half centuries ago the Royal Society of London was designed on the model proposed by the philosopher Francis Bacon. Nowadays science is being reviled on the strength of the caricatures of it drawn by the philosophers of the counterculture. Businessmen

know that the packaging, marketing, and advertising of their products are just as important as the products themselves. When will scientists and science teachers learn that this holds for their product as well? When will they stop feeling contempt for the sciences of science, while holding obsolete philosophical, historical, and sociological views on science?

CONCLUSION

Science and technology are heading for a severe crisis in North America. It is estimated that the United States will be short of about half a million scientists and engineers early in the next century (Powledge 1989). Assuming that the Canadian case is similar, we can expect a deficit of about 50,000 scientists and engineers in our country at the beginning of the twenty-first century.

This deficit is due to several causes: the so-called "baby bust," the decline in governmental support of education, the increase in military expenditures and the accompanying waste of talent, the spread of the counterculture, and the increasingly negative public image of science. The last factor should not be underestimated, for the choice of career is a psychological matter largely determined by the social standing of careers. Why should young people devote their lives to science if they are told that science is dull, not much different from ideology, responsible for all the current global problems and not even very prestigious? Why should they contemplate a scientific career if their Philistine leaders exhort them to seek wealth and power rather than knowledge and service? And why should they undergo a long and exacting training if they can make good and fast money with an M.B.A.?

No wonder that about 60% of the staff and graduate student body in the mathematics, natural science, and engineering departments in North American universities are foreigners. Up until now the brain drain from the Third World made up for our national deficit in grey matter. From now on we should not count on foreign brain supply because most of the Third World nations have started to decline steeply, rapidly, and perhaps irreversibly in most cases. If we do not train our own mathematicians, natural scientists, and engineers ourselves, no one else will.

Fortunately we have the means to avert the threat of scientific and technological decadence. We can prepare for peace and thus liberate huge material and human resources for social expenditures. We can improve the support of basic science. We can improve science education by recruiting the science teachers from science programs rather than from faculties of education. We can improve the quality of textbooks and of science coverage in the media by involving scientists in science education and popularization. All this would be in the interest of culture and government. It would also be in the interest of industry, which is suffering from a severe shortage of technical staff. (See Pearson 1989.)

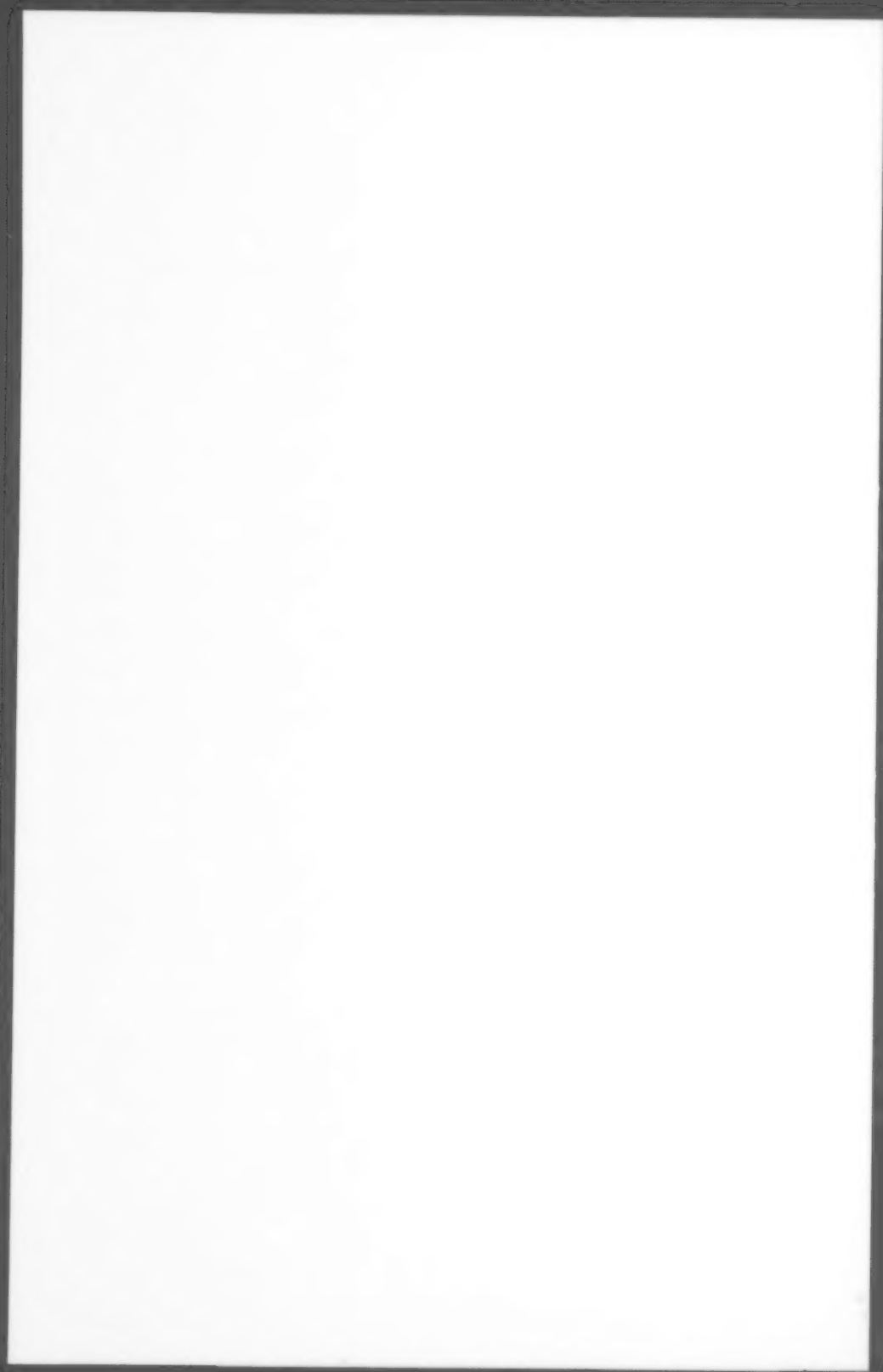
In short, the public image of science has been tarnished over the past two decades. However, the industrialized nations have the means to correct this

distortion, and to avert the threatening decline in science and technology through individual and collective action. Will they do it in time to prevent an irreversible decline of industrial civilization? In particular, will the Canadian federal and provincial governments realize in time that Canada may not make it into the next century as a fully civilized nation if it continues to be the industrialized country with the lowest investment in R&D, and whose educational authorities worry least about the sad state of science and technology?

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Electrochemical Physics of Materials[†]

1.0 INTRODUCTION

MODERN ELECTROCHEMISTRY comprises the study of ionic solutions and the science of the myriad phenomena occurring at the electrodes. The treatments of various problems in these two broad categories draw heavily upon (or interact strongly with) the following areas of scientific endeavour: (1) chemical kinetics, theoretical electrostatics, solid state physics, heterogeneous catalysis, interfacial phenomena in charged interphases, metallurgy and materials science, molecular biology and biomedical engineering, colloid and surface science, and, finally, instrumentation based on advanced electronics and optics. A convenient classification of the scope of modern electrochemistry (1) is depicted in Table 1.

Although many of the above areas of electrochemistry contribute greatly to our understanding of science and derived technologies in numerous ways, one of these areas stands out as the most prominent, namely, *electrochemical physics*: this is the advancing frontier where concepts of electrochemistry are combined with the notions of solid state science in order to develop better comprehension of problems associated with solid-electrolyte interfaces, solid electrolytes and derived applications. The main fields of activity in electrochemical physics (2) are listed in Table 2.

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† Thomas W. Eadie Medal Address, Université Laval, 7 June, 1989. I thank the Royal Society of Canada for their recognition of my work by the award of the Eadie Medal. I am grateful to the authorities of the Hydro-Québec for encouraging my work in their research division. My special thanks are due to my numerous colleagues, collaborators and mentors, for their sustained support. Special mention may be made of Allen Bard, Guy Bélanger, John Bockris, Lionel Boulet, Brian Conway, Jean-Pierre Crine, Bill Gauvin, Réal Jacques, Ross MacDonald, and Camille Sandorfy. The inspiring examples of John Polanyi and Abdus Salam as role models for scientists have been of great personal value to me.

TABLE 1 Main Areas of Modern Electrochemistry (1)

-
- 1 Ionic solutions and thermodynamics of electrolytes
 - 2 Double layer and charged interfaces in general
 - 3 Electrode kinetics and mechanisms of electrochemical reactions; theories of charge transfer
 - 4 Electroanalytical chemistry
 - 5 Applied electrochemistry: this includes research and development (at the laboratory level) in fields such as corrosion and protection of metals; electroplating, electrorefining and electrowinning of metals; batteries; fuel cells; electrolytic capacitors; electrochemical coulometers; electrochemical machining and electrosyntheses, etc.
 - 6 Electrochemical engineering: this comprises the discussion of industrial processes or of pilot-plant projects in which principles of electrochemistry as well as engineering concepts are overlappingly involved
 - 7 Interdisciplinary electrochemistry: for example in fields such as colloids and surface chemistry, irreversible thermodynamics, bioelectrochemistry, electrobiophysics, water pollution, ion exchange membranes and some aspects of solid state and materials science, knowledge of both electrochemistry and the other field is required for proper elucidation of the natural phenomena involved
-

TABLE 2 Main Areas of Electrochemical Physics

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- Electrochemistry of semiconductors
 - Electrochemistry of insulators (e.g., Anthracene)
 - Anodic oxide growth on metals and semiconductors
 - Reactions on demetallized surfaces and coated electrodes
 - Electrocatalysis by metals, alloys and intermetallics
 - Chemical physics of interfaces: double layers and their electro-chemical thermodynamics and statistical mechanics
 - Role of crystal imperfections in metal deposition and dissolution reactions
 - Solid electrolytes: ice, polymers, ceramics, superionic conductors
 - Energy levels in solids and electrolytes
 - Electrobiophysics
 - Quantum mechanical treatments of charge transfers
 - Photoelectrochemistry
 - Ionic transport through membranes
 - Fractals on electrodic surfaces
 - Solitons in polymeric batteries
 - Metal-plasma interfaces
 - Metal-dielectric interfaces
-

From the foregoing it is clear that modern electrochemistry requires an understanding of a variety of advancing areas of contemporary science and, reciprocally, enriches these areas by bringing to bear upon them the modes of thought and techniques of electrochemistry.

2.0 THE NATURE OF ELECTROCHEMICAL PHYSICS

The new strides in the understanding of interfacial charge transfers emphasize the paramount role of the solid state properties of the electrode materials in determining the kinetics of processes occurring across electrode-electrolyte interfaces. This approach has given rise to a vast array of modern fundamental research in which electrochemical phenomena are examined in relation to the solid state physics of electrodes, electrolytes and the corresponding interfaces

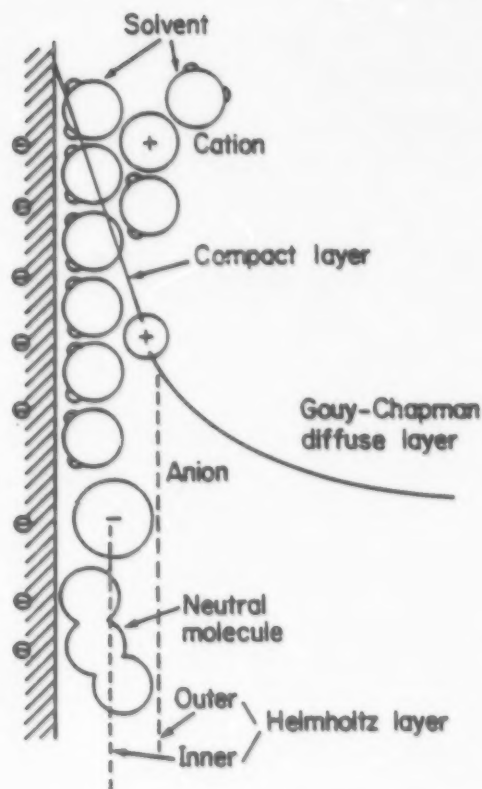


FIGURE 1 A schematic diagram of the metal-electrolyte interphase; taken from Conway (5).

involved. This area of research is termed *electrochemical physics*. The enormous range of electrochemical problems that can best be investigated in terms of the solid state properties of the materials involved has been previously delineated in a monograph (3). A more synoptic overview of the field has been published recently (4).

Although electrochemical physics deals with the chemical physics of all charge transfer phenomena, including those occurring in bulk phases such as solid electrolytes, ionic liquids, ice, etc., the principal focus of research is the mechanisms of reactions across electrode-electrolyte interfaces. Such reactions occur in the interphasic region called the double layer that arises when an electrode (essentially an electronic conductor) comes into contact with the electrolyte (essentially an ionic conductor). The structure of such a double layer region formed between a metal electrode and an ordinary electrolyte solution (e.g., an aqueous solution) is shown in Figure 1, after Conway (5).

TABLE 3 Electrode / Electrolyte Interfaces

<i>Electrodes</i> (<i>Electronic Conductors</i>)	<i>Electrolytes (or equivalent)</i> (<i>Ionic Conductors</i>)
Metal	Aqueous electrolyte Non-aqueous electrolyte
Demetallized Surface	Insulating liquid Plasmas "Vacuum"
Semiconductor	Molten Salt Solid electrolyte
Insulators	

Notes:

- 1 Plasmas are charged species in the gas phase and may best be treated as gaseous electrolytes
- 2 The word "equivalent" refers to vacuum which in practice is a low-pressure plasma, i.e., vacuum contaminated by charged micro-particles and ionic species released into the vacuum gap by the erosion of electrodes
- 3 An electrode is essentially an electronic conductor whereas an electrolyte is an ionic conductor. Thus an insulating liquid is an electrolyte by virtue of ever-present impurity ions; similarly a vacuum is a gaseous electrolyte since it behaves as a low-pressure plasma
- 4 Insulators become electronic *conductors* as a result of injecting reactions as described (1)

TABLE 4 Some Present and Projected Applications of Research in Electrochemical Physics

Fuel cells
Photoelectrolysis cells
Electrochemical photovoltaics
Photogalvanic devices
High electrochemical energy density storage units for load levelling
High power, high energy density power sources for vehicle propulsion
New and / or improved electrolyzers for the production of hydrogen, chlorine, fluorine etc.
Stability of colloidal dispersions of industrial importance
Metal-oxide devices, e.g., electrolytic capacitors
New approaches to the electrochemical stability of materials
Numerous applications in biology, surgery, geophysics, materials science and electrical engineering, etc.

As electrodes can be made of a variety of metals, semiconductors and composite materials and the electrolytes can occur in different states (e.g., aqueous, solid, molten, gaseous, etc.), a large number of interfaces can arise across which electrochemical reactions can be made to proceed. The wide range of these interfaces is indicated in Table 3, after Vijn (2).

A fertile area of basic research, such as electrochemical physics, is a necessary pre-requisite for productive strides in new technology, as has been aptly stated by John Polanyi (see, e.g., in ref. [4]): "There is little question that modern technology advances across ground cleared and made passable by the systematic explorations of basic science." In the context of Polanyi's observation, some current and projected industrial applications of electrochemical physics are presented in Table 4.

3.0 SOME THEMES AND HORIZONS IN ELECTROCHEMICAL PHYSICS

An earlier outline of the entire area is available in my monograph (3), and recent reviews (2, 4, 6) focus on current developments. It appears less useful, therefore, to present another survey; the aim here is to select some multidisciplinary themes and show the manner in which they enrich the field of electrochemical physics and, in return, draw upon the fertility of its conceptual framework.

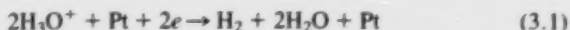
3.1 *Electrocatalysis and Fuel Cells*

Electrocatalysis (3) attempts to explore the relationship between the properties of an electrode (either metallic or semiconducting) and the magnitude of its activity towards a given electrode reaction. In this sense it is very similar to the field of gas-phase heterogeneous catalysis except for the presence of the following two additional parameters:

1 The presence of a potential drop at the electrode-solution interface can alter the energy of activation for the catalytic reaction in a given direction, depending on the sign and magnitude of the applied electrode potential.

2 The presence of potential drop (and hence field) in the interphasic region between the electrode and the electrolyte creates a situation that tends to encourage, under some experimental conditions, the corrosion and dissolution of the electrode. If one takes into account these additional factors of the potential drop and the electrochemical stability at the electrode-electrolyte interface, one realizes that many of the other factors involved in electrocatalysis are similar to those found in the theory of heterogeneous catalysis at surfaces.

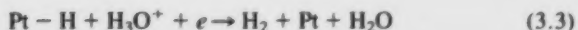
When a sufficiently high electric current is passed between two electrodes immersed in an electrolyte solution, electrochemical reactions occur at these electrodes. Taking the well-known example of the electrolysis of water occurring by the passage of direct current between two platinum electrodes in, e.g., an aqueous solution of sulphuric acid, we note that hydrogen is evolved at the cathode (attached to the negative of the power source) and oxygen evolution takes place at the anode (attached to the positive of the power source). The overall cathodic reaction may be represented as:



The various steps involved in the overall reaction 3.1 are



followed by



or



where e is the electron donated by the platinum cathode; H_3O^+ is the hydrated proton in the acidic aqueous solutions; $\text{Pt} - \text{H}$ represents a chemisorbed hydrogen atom on a site on the Pt electrode.

In electrode reactions such as hydrogen evolution (3, 5), presence of adsorbed reaction intermediates is indicated, at least for the more catalytic metals. The evidence on the presence of adsorbed intermediates during the electrode reaction is principally deduced from electrochemical transient studies, e.g., open circuit decay of electrode potential, potentiodynamic (i.e., cyclic voltametric) profiles, charging curves (i.e., chronopotentiograms), and by a combination of a variety of potentiostatic and galvanostatic pulse techniques. Recently-developed optical techniques also provide useful information on the coverage of the electrode by adsorbed species during the electrode reaction. In any case, these gas evolution and dissolution reactions are influenced profoundly by a number of solid state properties of metallic electrodes, e.g., work functions, heats of sublimation and the metal-metal (M-M) bond energies derived therefrom, electronegativities, electronic structure of metals (especially in relation to unfilled d-bands in transition metals), lattice parameters, and a variety of other quantities such as atomic number, compressibility, density, ionization potential, melting point, boiling point, hardness, volume and linear expansion, ionic radius, electrical resistance, etc.

The influence of these properties on the electrocatalysis of the hydrogen evolution reaction arises by virtue of their effect on the strength of the M-H binding of an adsorbed hydrogen atom H on a metal site M. Theoretical treatments of the role of M-H interaction energy in the electrocatalysis of h.e.r. by metals involve the following essential rate equations:

The forward rate equations for the steps in equations 3.2 and 3.3 are, respectively:

$$i_2 = \frac{kT}{h} F(1 - \theta)C_{\text{H}_3\text{O}^+} \exp \left\{ -\frac{\Delta g_o}{RT} - \frac{\beta \Delta G_{\text{H}}}{RT} - \frac{\beta FE}{RT} \right\} \quad (3.5)$$

and

$$i_3 = \frac{kT}{h} F\theta C_{\text{H}_3\text{O}^+} \exp \left\{ -\frac{\Delta g_o'}{RT} + \frac{\beta \Delta G_{\text{H}}}{RT} - \frac{\beta FE}{RT} \right\} \quad (3.6)$$

Here Δg_o and $\Delta g_o'$ are the adsorption-independent (i.e. metal-independent) free energies of the activated complex at $E = 0$, where E is the electrode potential measured against an arbitrary reference electrode; ΔG_{H} is the free energy of adsorption of atomic hydrogen H; i_2 and i_3 are the current densities; k , T , and h are Boltzmann constant, absolute temperature, and Planck's constant,

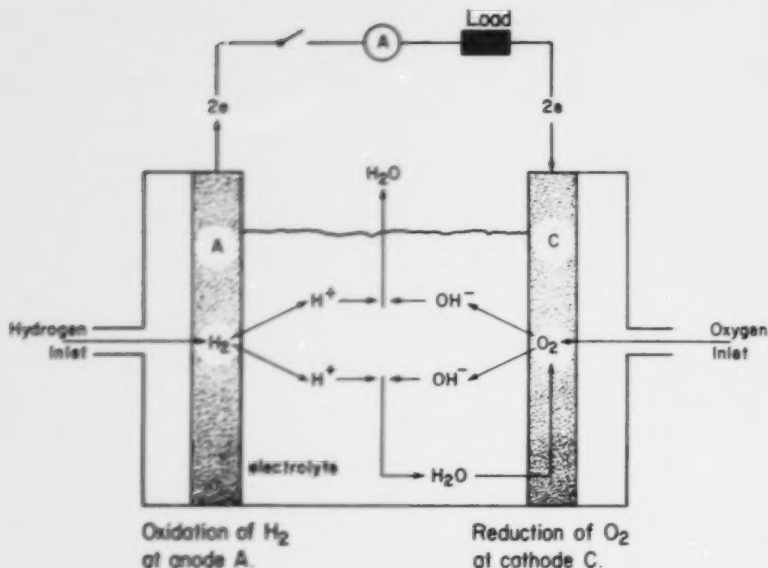


FIGURE 2 A schematic diagram illustrating the components and principles of a fuel cell (3).

respectively; θ is the fraction of the electrode surface covered by adsorbed H; $C_{H_3O^+}$ is the bulk concentration of the H_3O^+ ions and, for simplicity of discussion, may be taken as the surface concentration by assuming concentrated solutions; R is the gas constant; F is the Faraday; and β is the charge transfer symmetry factor with the usual value equal to 0.5.

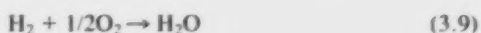
It should be emphasized here that the electrocatalytic activity of an electrode in these rate equations is governed by the magnitude of ΔG_H , which in turn is determined by the physical and electronic properties of the metals, as mentioned above.

Electrocatalysts find many applications. An interesting example are the fuel cells (Figure 2) that provide electric power to spacecraft. The electrolytic production of hydrogen, chlorine, fluorine, and other industrial chemicals is based on the availability of good electrocatalysts; the elimination of interfacial power losses in the production of aluminum, copper, zinc, etc., also requires conditions in which the electrodeposition reaction can be catalyzed at high rates. The entire field of batteries and accumulators rests on an understanding of the factors involved in increasing the rates of the energy-producing electrochemical reactions, viz., electrocatalysis.

Fuel cells are continuously-fed primary batteries in which the appropriate chemical substances are "consumed" at electrodes to produce electricity. The direct conversion of chemical energy to electrical energy will continue to

proceed in a fuel cell as long as the reactants ("fuels") are being fed into it and the products of the electrode reactions are being eliminated from the device.

To illustrate the principles involved in a typical fuel cell, consider a hydrogen-oxygen fuel cell. In its barest essentials, it involves an anode and a cathode immersed in an electrolyte. Gaseous hydrogen is fed at the anode and gaseous oxygen (or air) is led onto the cathode. The anodic and cathodic reactions involved in an acidic electrolyte are



The overall reaction in the fuel cell is given by combination of the anodic reaction and the cathodic reaction and is the electrochemical "combustion" of H_2 and O_2 to form H_2O . The waste product in this particular example of the fuel cell is the H_2O which must be continuously removed. As a result of the reactions in equations 3.7 and 3.8, the anode and cathode will acquire a difference of potential derived from the free energy change in the overall reaction in equation 3.9.

The intensity (the difference of the reversible potentials of the anodic and the cathodic reactions, denoted by E , in volts, V), and the quantity (in faradays, F , or coulombs, C) of the total fuel cell output are contained in the molar free energy change, ΔG , of the overall reaction in equation 3.9. The relationships between these diverse quantities are given by

$$\Delta G = -nFe = -E \int I dt = VC \quad (3.10)$$

where n is the number of electrons per molecule of the anodic fuel (for hydrogen in the present example, n is, of course, 2), I is the average current in amperes derived for t seconds.

3.2 Photoelectrochemistry

The field of electrochemistry of semiconductors (3) has seen an explosion of published papers on the photoelectrochemical properties of semiconducting electrodes in the 1975-80 period and the activity in this field has become more intense since then; in the recent past, it has become one of the most active areas of fundamental research in physical science (4, 6-13).

The principles of photoelectrolysis may be illustrated by considering the simple cell shown in Figure 3. When a photon of light is absorbed at the semiconductor anode (e.g., TiO_2), an electron-hole pair is created and separated at the semiconductor-electrolyte interface. The hole is driven to the anode surface and reacts with OH^- ions to give oxygen. The electrons are conducted

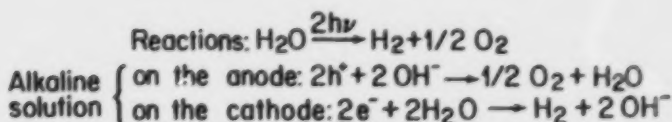
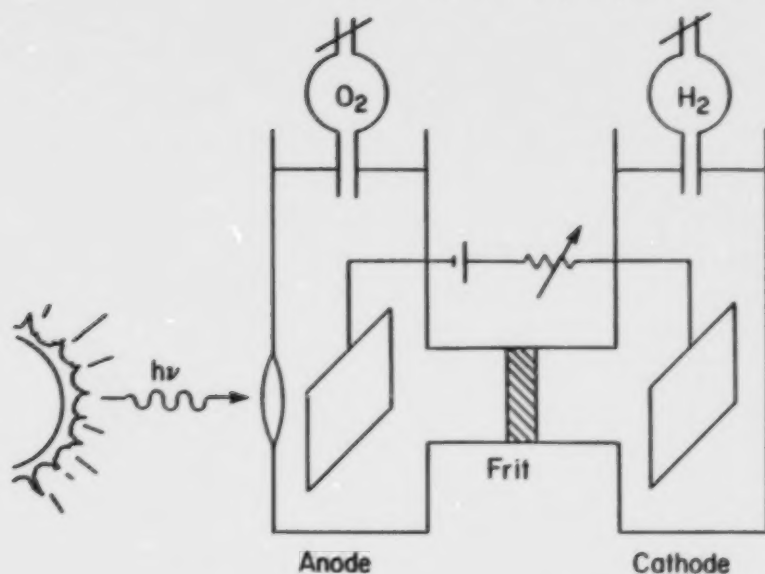
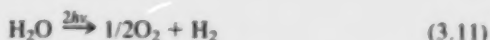


FIGURE 3 A schematic diagram of photoelectrolysis cell (12).

through the external circuit to the platinum cathode where they react with water (e.g., in alkaline solutions) to give gaseous hydrogen. The net reaction in the photoelectrolysis cell (Figure 3) is:



In ordinary electrode reactions, one arranges to make the chemical species "react" with the electrons derived from the externally applied electric current being passed between the anode and the cathode. In photoelectrochemical reactions, it is the photons of the incident light that are captured by the semiconducting electrode and split into electrons and holes which are used to drive the electrochemical reactions in the same way as the electric current in ordinary electrolysis. Thus the photoelectrolysis cell such as shown in Figure 3 is, essentially, equivalent to a combination of a photovoltaic cell and an electrolyzer. In a more general way, harvesting of photons to drive (either partially

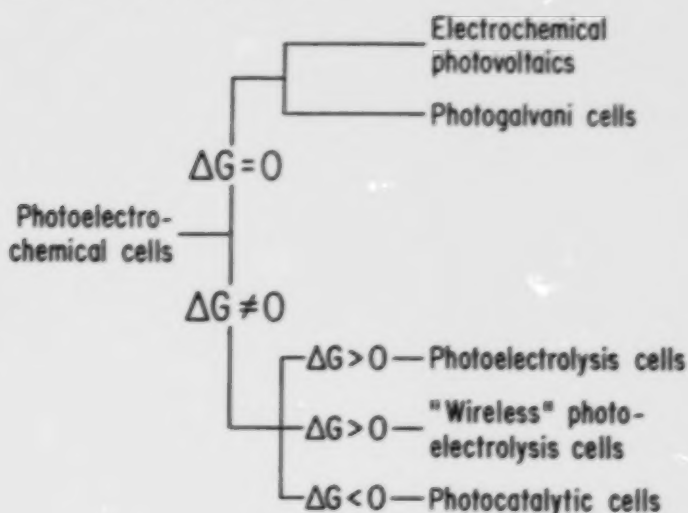


FIGURE 4 Various types of photoelectrochemical cells and the free energy changes involved (4, 8).

or completely) an electrochemical reaction can give rise to the following five situations (Figure 4).

3.2.1 Photoelectrolysis cells

Also called the photosynthetic cells, they capture photons to produce a useful substance (viz. H_2) via a photoelectrochemical reaction, as in Figure 3. The overall reaction is driven in a thermodynamically uphill direction, with a positive free energy change; the solar energy is thus stored as the chemical energy of the products, i.e., H_2 . These energy conversion units thus combine the functions of electrochemical energy conversion and storage.

3.2.2 Electrochemical photovoltaics

These cells use a single redox couple in the electrolyte and the oxidation at the anode is exactly opposite to the reduction at the cathode, i.e.,



and



The absorbed photon increases the free energy of electrons in the semiconductor electrode and the useful electrical work is done when these electrons traverse the external circuit to go to the counter electrode in order to maintain the two electrochemical reactions. The electrolyte undergoes no *net* chemical change and the free energy change in the overall cell reaction is zero. These cells are energy *conversion* units in which optical energy is converted to electrical energy; these devices are also called regenerative cells or liquid-junction photovoltaics.

3.2.3 Photocatalytic cells

In such cells optical energy is neither converted nor stored but is used to catalyze a thermodynamically feasible but kinetically slow reaction. An example of such reaction is the photo-Kolbe reaction where acetic acid is oxidized to ethane. The net free energy change in such reactions is, of course, negative since one is merely accelerating a reaction already occurring at a slow rate.

3.2.4 Photogalvanic cells

Here, the incident light is *not* absorbed by the electrode. The photons are instead captured by an electrolyte component such as suitable dye molecules, with a subsequent charge transfer process to an electrode. In these cells, since optical energy is also converted to electrical energy, they may be considered to be a variation of electrochemical photovoltaics.

3.2.5 "Wireless" photoelectrolytic cells

One can have photoelectrolytic cells constituted by colloidal particles suspended in an electrolyte and producing H_2 and O_2 on illumination with light of suitable energy. Each such colloid particle has anodic and cathodic sites for the production of electrolytic oxygen and hydrogen, respectively. An example of such a colloid particle is TiO_2 in which seats of cathodic and anodic reaction are provided by microscopic platinum and RuO_2 sites, respectively; these two electrode reaction sites are electrically "connected" through the semiconducting TiO_2 . Such systems are called bifunctional catalysts since the same colloidal particle supports the anodic and cathodic "functions." Here these have been termed "wireless" since no electrical connections need be made either between the anode and the cathode or of the electrodes with an external power source. Since they are basically photoelectrolytic reactions producing a storable fuel such as H_2 , the overall free energy change is positive. In actual practice, these systems are much more complex and also involve the use of a sensitizer (which captures a photon, becomes excited and ready to undergo an electron transfer) and a relay (to participate in the electron transfer with the excited sensitizer) molecule in the solution.

Although a variety of photoelectrochemical cells can be formed, the fundamental problems in all these cells involve some common features. The most paramount difficulty in such energy conversion and storage systems is the long term stability of the semiconductor-electrolyte interface. In addition to the electrochemical stability, there are two other critical parameters that influence the performance of photoelectrochemical cells: band gap, which determines the absorption characteristics of the semiconductor electrode; and the flat-band potential (this is the potential at which the bands at the semiconductor-electrolyte interface show no bending and are hence flat—this is the situation of zero *net* charge in the interphase), which governs the maximum attainable photo-voltage of these cells.

3.3 Quantum Electrochemistry (14–25)

Gurney's earlier seminal work on the quantum mechanical treatment of charge transfer on electrodes led to Gerischer's formulation of these ideas to treat the redox reactions on semiconductor electrodes (14). It is obvious that the capture of a photon by a semiconductor electrode (Figure 3) to photo-electrolyze water is a quantum process and can occur only when the energy of illumination exceeds the band gap value. There are a large number of electrochemical problems that can be extended quantum mechanical treatments owing to the nature of the physico-chemical processes involved.

Fundamentally, *all* electrochemical reactions are quantum mechanical charge transfer events (14). Consider, for example, the metal-electrolyte interface (Figure 1). For an electron to leave the metal and "react" with a molecule (or ion) residing in the Helmholtz double layer, one can show that the emission rate of the electrons from the metal by a classical (non-quantum mechanical) method gives a negligible rate of electron emission, ca. $10^{-16} \text{ A m}^{-2}$. This calculation is carried out by assuming that the average thermal energy of an electron in the metal is sufficient to make some of them spill out of the energy states in which they are held in the metal and therefore reach the molecules (or ions) in the Helmholtz double layer (14). For a typical electrode reaction, the real current densities are, however, at least 10^{10} times greater than the above estimate, i.e., in the neighborhood of 10^{-6} A m^{-2} . To sustain such rates the electrons in the metal do not leap over the energy barrier in the double layer in the classical sense; instead, they exhibit their wave properties which enable them to *tunnel* through the energy barrier (14–21). This is also what is expected from the elementary quantum theory: any movement of particles within a confined space (e.g., the interphasic region at the electrode/electrolyte interface) must be quantized, as e.g., that of electrons within an atom (15).

There are several other prominent lines of research in quantum electrochemistry, in addition to the aforementioned problems of electron transfers at metal-electrolyte interfaces, redox reactions on semiconductors, and photoelectrochemical processes. Proton transfers in water, ice, and extremely dilute electrolyte solutions can show features amenable to quantum mechanical interpretations. Another major area is that of proton transfers at interfaces (14–20).

Electron transfer on oxide-covered electrodes presents several possibilities of quantum mechanical tunnelling (21): direct tunnelling through the oxide, indirect tunnelling via the conduction or valence band of the oxide, and the resonance tunnelling via localized donor terms in the oxide. The tunnelling process in all these cases is believed to be elastic, i.e., it proceeds at constant electron energy. One of the most actively-researched subjects in quantum electrochemistry is the study of *plasmons* (22–25) on metal surfaces in general and on electrodes in particular: these are quantized plasma oscillations on the surface of a metal when its electron gas undergoes a collective oscillation, as a result of the Coulomb interactions of this electron gas with the positive lattice ions (25). A typical value for the frequency of these oscillations is around 10^{15} Hz.

3.4 Electrochemical Physics in Biology (26–35)

As early as 1928, Lund (26) proposed that the electric fields in cells were caused by the differences in electrode potentials of oxidative enzymes. This idea was further developed by Jahn (27) in 1962 and quantified by Cope (28); the latter author has also presented a solid-state kinetic theory of electron transfer through protein molecules, and of conduction of ions across cell membranes (35). He also presents an excellent review of the electrochemical physics of biological systems. Especial mention may be made here of Mitchell's ideas on proticity and protonmotive reactions in biology and their discussion in analogy with the principles of an electrochemical fuel cell; it may be added that this work was recognized by the award of the 1978 Nobel Prize for Chemistry (33).

Currently, a great deal of activity in this field is focused on problems such as: electrochemistry and biophysics of living cells, immunology, mechanisms of thrombosis, electrochemical inactivation of pathogens, and the fuel cell type of reactions involved in the generation of biochemical power of living beings. Other topics being investigated are: electrodic mechanisms of photosynthesis, photoelectrochemical energy conversion by bacteria, electrochemical transduction of light energy by chloroplast membranes, investigations by electrochemical techniques on the mechanisms of drug action, submolecular biology of living cells, and electrochemical information transfer at cell interfaces (34).

A particularly striking example of the application of electrochemical physics (= electrode kinetics + solid-state physics) to a biological problem is provided by the model of an enzymatic particle (35) (or membrane fragment) postulated by Cope (Figure 5).

He assumes two sites on the particle at which small molecular weight substrate molecules can exchange electrons with the particle. The two substrates (*X* and *Y*) can each exist in an oxidized or reduced form. He further assumes enzymatic specificity of the site for the substrate: in other words, the *X*-site on the particle can exchange electrons only with *X*-substrate, and the *Y*-site can exchange electrons only with the *Y*-substrate.

He then considers the system shown in Figure 5 from the point of view of

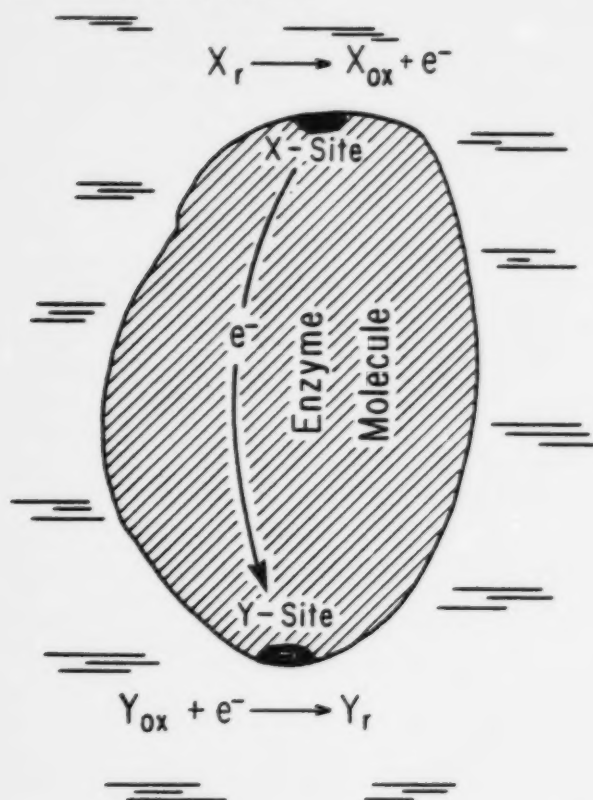


FIGURE 5 Enzyme particle showing overvoltage phenomena (35). X-site on the particle acts like an electrode immersed in a solution of redox substrate X, so that the X-site develops an equilibrium electrode potential governed by the percent reduction of substrate X. The X-site is assumed to have enzymatic specificity for reaction with X-substrate: in other words, the X-site can exchange electrons freely with X-substrate but will not react with Y-substrate. The Y-site, at the other end of the enzyme particle acts like a second electrode immersed in a solution of a second redox substrate Y, and develops an equilibrium electrode potential governed by percent reduction of Y. The direct reaction of X- and Y-substrates in solution is assumed to be insignificantly slow. The difference in electrode potentials at the X- and Y-sites causes a current of electrons to flow through the conductive solid enzyme particle. The rate of current flow, and hence the rate of oxidation of X-substrate by Y-substrate, is governed by the overvoltage phenomena at the X- and Y-sites, and by the electrical resistance across the solid enzyme particle.

"electrode overvoltage" theory. The *X*-site and *Y*-site act as two electrodes immersed in two solutions with different equilibrium electrode potentials. When the two sites are connected by a wire, or by the internal resistance of the enzyme particle, a current of electrons flows, which is limited by the overvoltage at the *X*- and *Y*-sites (or electrodes) and by the electrical resistance across the particle. To develop the theory, he expresses the site (or electrode) potentials and the overvoltage-current equations in terms of substrate concentrations and time and shows that:

$$V_{\text{cell}} = ir + (V_{\text{act}})_X + (V_{\text{act}})_Y + V_{\text{diff}} \quad (3.14)$$

where *i* is electrical current through the particle, *r* is the electrical resistance through the particle between the *X*- and *Y*-sites, V_{act} is the activation overvoltage (at *X* or *Y* site), and V_{diff} is the diffusion overvoltage. He then shows that the experimental behaviour of such an enzyme particle or membrane fragment, in many cases, assumes two limiting cases in which either the activation overvoltage or the resistance of the semiconducting particle determines the kinetics under conditions of negligible diffusion overvoltage, as in general electrode kinetics.

3.5 *Electrochemical Materials Science* (36–56)

The most prominent topic in electrochemical materials science is that of oxides on metals, alloys and semiconductors grown anodically either in a liquid or a gaseous electrolyte (i.e., a plasma). These oxides and oxide layers (36, 37) involve electrochemical charge transfers, both electronic and ionic, and have a bearing on the following problems: electrocatalysis and catalysis on oxides, anodic finishing of metals, oxide ceramics, solid oxide electrolytes, corrosion reaction films, dielectric properties, rectification, electrical breakdown, electroluminescence, mechanical properties, tribological characteristics (e.g., hardness, friction, and wear) magnetic properties, optical behaviour, oxide glasses, colloidal and interfacial characteristics of oxide suspensions in aqueous and nonaqueous media, electrical barriers and epitaxial problems at metal-oxide interfaces, chemical and dissolution characteristics of oxides (e.g., their hydration and dissolution as of importance in the flotation and leaching of ores), several industrial processes and products such as batteries, electrolytic capacitors, MOS and related technologies, dielectric and insulation materials, thin film devices, nuclear technology, and energy conversion and storage systems.

Electrochemistry of materials also finds use in geophysics (2, 38–45). An electrochemical model for the formation of deep-seated iron ores has been proposed. Electrochemical principles have also been used in geophysical prospecting, in explaining sulphide ore bodies, and in the analysis of redox gradients in ore deposits. Genesis of ore deposits has been elucidated in terms of electrochemical theory; it has been shown that electric potential differences

within a sulphide body could cause the movement of metals, thus affecting the distribution of elements in rocks.

An exciting area of research in materials science is the wide field of solid electrolytes (45, 56), e.g., intercalation compounds of interest in rechargeable batteries (46, 54). The continued development of the sodium-sulphur battery has assured the research activity on β -alumina electrolytes (48). The present focus is on polyphase electrolytes composed of a mixture of an ion-conducting phase with a nonconducting one, e.g., a mixture of LiI and $\gamma\text{-Al}_2\text{O}_3$; such mixtures are believed to give enhanced ionic conductivity. A variety of other solid electrolytes is also being examined in connection with advanced batteries.

The most promising new area of solid electrolytes is that of *ionic* polymers in which the polymer behaves as an electrolyte (55). A great deal of activity has also been generated by the conducting (i.e., non-ionic conduction) polymers such as polyacetylene, owing to their claimed potential interest in batteries (56). Such materials are also of considerable interest to solid-state physicists because of the presence of solitons in *trans* polyacetylene (Solitons are domain walls between regions of two degenerate phases on a chain of *trans*-(CH)). However, the generally-held belief that the structure observed below the interband threshold in the optical absorption spectrum of lightly doped polyacetylene arises from the presence of solitons has been contested.

3.6 *Applied Physics, Electronics and Electrical Engineering* (57-71)

Several areas of applied physics and electrical engineering also lend themselves to interpretations in terms of electrochemical physics of charge transfer events (57-71). Electrical properties of anodically formed insulating films on the so-called valve metals (3, 37, 57) have been described. The nature of electrochemical reactions between metal electrodes and SF_6 during the decomposition of SF_6 due to direct current interruption under simulated circuit-breaker conditions has been elucidated (58). The quantitative treatment of the magnitude of cathode fall voltages observed in electric arcs in terms of an electrochemical model of the metal/plasma interface has been carried out (59). The electrode effects in vacuum can be interpreted in terms of solid-state science both in the absence (60) and the presence of surface oxides (61). The interfacial effects predominant in metal-polymer-metal systems have been shown to be electrochemical in nature (62). Similarly, the origin of electrical signals observed at metal electrodes during detonation of nitromethane has been traced to the electrochemical reactions at the metal-electrolyte interface (63). An electrochemical theory for the dielectric breakdown of ideal ionic solids, i.e., alkali halides, has been put forward (64). Similarly the magnitudes of limiting flashover voltages observed on salt-contaminated SiO_2 plates have been clarified in terms of solid-state electrochemistry (2, 65).

The principles of solid-state physics have also been applied to *liquid* electrochemical materials in a manner of possible interest in device physics. Thus some fundamental analogies between solid, molten, and aqueous materials

have been pointed out and the concepts of energy levels in electrolytes have been related to the band theory of solids (66). This treatment inter-relates the conceptual foundations of the following topics: Gurney's ideas (67) on the occupied and vacant proton levels in electrolyte solutions, Rose's approach (68) to electron levels in solids and electrolytes, Fuller's analogies (69) between semiconductors and electrolyte solutions, properties of molten salts discussed by Bockris and co-workers (70), and the industrial applications of these concepts to the corrosion (and inhibition) of aluminum and magnesium in water as reported by Vermilyea (71).

4.0 CONCLUDING REMARKS

In conclusion, electrochemical physics offers many challenging problems to those interested in the chemical physics of charge transfer events, both in terms of classical kinetic concepts and quantum mechanics. It also provides some avenues for interdisciplinary investigations on important problems of energy conversion and storage (e.g., photoelectrochemical devices), biology, chemistry, geology, physics, metallurgy, and electrical engineering (6). An interesting non-technical article (72) traces, sketchily, the development of electrochemistry from ancient Mesopotamia to the ultra-modern research on the molecular basis of brain function.

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APPENDIX A

ELECTROCHEMICAL ("COLD") NUCLEAR FUSION

My initial intention was to present my own research work on *Electrochemical Physics* as the Thomas W. Eadie Award Address; Dr. Huw Pritchard, however, suggested that the members of the Academy of Science of the Royal Society of Canada might find it of interest to have my views on the recent furor on electrochemical ("cold") nuclear fusion since:

- it falls within the province of my research interests;
- we have been running some experiments on this problem ourselves.

Hence the change in the orientation of my Eadie Award Address and the origin of this Appendix.

A.1 Is there an electrochemical nuclear fusion?

To demonstrate the presence of electrochemical nuclear fusion conclusively, one must:

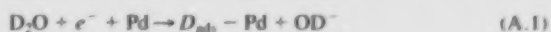
- 1 observe the products of nuclear fusion, e.g., γ -rays, neutrons, tritium, ^3He and ^4He etc. depending on the nuclear reactions invoked;
- 2 be able to replicate the experiments.

To date (19 May, 1989), these conditions have not been met although there is some residual evidence from a number of serious chemical scientists that tends to point in the

direction of the presence of some new phenomenon. Keeping this in mind, we proceed as follows. The same conclusion holds true on 29 December, 1989, when proofs of this paper were corrected.

A.2 *The electrolysis of D₂O*

When one electrolyzes D₂O with, e.g., a Pd cathode and a Pt anode as Fleischmann and Pons (F-P) have done, one would observe the evolution of oxygen at the anode (Pt) and the evolution of deuterium at the cathode (Pd). Thus under ordinary experimental conditions, one has the following steps (in an alkaline solution):



followed by



or

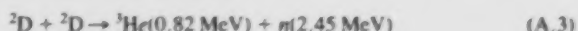


or

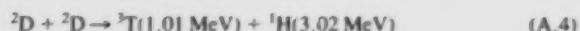


i.e., one has a chemical combination of adsorbed D_{atoms} (reactions (A.2a) or (A.2b)) or a deuteride formation (reaction (A.2c)).

However, Fleischmann and Pons (F-P) claim (1) that under their conditions of experimentation the Pd electrode is heavily charged with deuterium; the extremely high concentration of deuterium and the unusually high "pressure" (actually fugacity) of deuterium in Pd caused by the applied overpotential to the cathode seems to create conditions that produce "excess" heat (four times over that fed into the cell by the electric power); this "excess" heat together with the claimed observation of some neutrons, γ-rays, tritium and ⁴He (claimed in television interviews) etc. point, according to F-P, towards a nuclear fusion of deuterium atoms as (1):



or



Let us now examine the F-P evidence on this matter and other possible analyses of their claimed data.

A.3 *The Pons-Fleischmann "Evidence" for Cold Fusion*

F-P claim (1) to observe the following:

1 Neutrons

They observe neutrons about three times the background concentration, supposedly produced by reaction A.3 here.

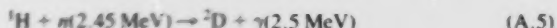
2 Net Heat Output

F-P maintain that they observe four times (and in subsequent oral presentations they claim up to fifty times) the heat output/input ratio. Such a high production of heat cannot

be explained by chemical reactions, according to F-P, and, hence, must arise from nuclear fusion.

3 γ -rays

They take out their charged Pd electrode presumably emitting neutrons and dip it into the water bath and see γ -rays produced by the reaction:

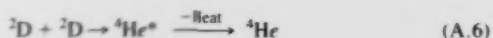


4 Tritium

They claim evidence for the production of tritium, by the fusion reaction A.4 here, in their electrolyte solution following a prolonged electrolysis.

5 ^4He

Pons has recently (orally) claimed the presence of ^4He that he thinks is produced by the fusion reaction



where $^4\text{He}^*$ is excited ^4He which gives its heat to the Pd lattice and becomes ^4He .

A.4 *The Skeptics' Interpretation of F-P Data (2, 3)*

1 Neutrons

Since the claimed neutrons are not an order of magnitude above the background count and difficult to replicate, artifacts or background or instrumental problems etc. cannot be ruled out as their origin.

2 Net Heat Output

A number of laboratories have observed an excess heat of the order of 10–15%; this could be explained by chemical reactions, e. g., the recombination of some of the D_2 and O_2 in a "fuel-cell" type of reaction. Also, a more thorough analysis (3) of the F-P data (2) shows that the heat is only 13% more than the input. Also, the calorimetry procedure of F-P has been criticized for experimental weaknesses such as possible hot spots.

3 γ -rays

The 2.2 MeV gamma-rays offered by F-P can arise from radio-active decays of bismuth derived from naturally-occurring radon.

4 Tritium

The ^3T in the F-P experiments would simply be expected to arise from the concentration effect of naturally-occurring T_2O in D_2O , by the prolonged electrolysis and the consequent necessity of adding D_2O to the electrochemical cell.

5 ^4He

The obvious source would be from contamination by laboratory air. No ^3He has been claimed to date to have been detected (cf. reaction A.3 here).

A.5 *Conclusions*

The physics community is nearly unanimous in their conclusion that the F-P results, whatever their validity, are not cold fusion. Also, they find it impossible to replicate most of the F-P data.

In the electrochemical community, at least three reputable teams have observed

excess heat (10–15%) in D_2O as compared to a H_2O reference cell. There is also some fleeting evidence for neutrons just above the background level. However no electrochemist has been able to reproduce the F-P data, especially their fantastic claims regarding the excess heat. Many electrochemists still sustain the hope that there is something real in the F-P results and that people have not been able to replicate F-P results because all the "tricks" in the F-P recipe to get "cold fusion" have not been disclosed, owing to patent and commercialization considerations. Such undisclosed factors could be in the exact composition (traces of Li?) of the Pd electrode and its method of preparation (casting?); additives in the electrolyte solution that would promote full charging of Pd by deuterium; the role of poisons (e.g., H_2 , H_2O , C, S) for the "fusion" reaction.

A.5.1 It is a Mirage in Any Case

Even if one were to assume that the F-P claims regarding the heat generation are valid, it will not help very much in terms of the world energy situation, notwithstanding the claims in the popular media. It has been estimated (3) that roughly 70–80 tons of Pd reaches the free-world markets every year. If all of this Pd were used in the F-P type of reactor, one would produce (3) 155 MW, which is about one-sixth of a normal size nuclear reactor for producing electric power. Not only the fact that it is a quite insignificant amount of power on a world scale, but also the price of Pd would be pushed (it already is) so high that such a scheme would be out of the question. One dreams, of course, that similar results would be obtained on other metals than Pd. However, the place of Pd is rather unique as regards its properties for absorbing hydrogen and deuterium although some other metals are also strong absorbers of H_2 and D_2 .

A.6 References

- 1 M. Fleischmann and S. Pons, *J. Electroanal. Chem.*, **261**, 301 (1989).
- 2 M. Crawford, *Science*, **244**, 523 (May 5 1989).
- 3 Several authors, *C & E News* (Amer. Chem. Soc.), May 8 1989, pp. 2, 3 and 45.

Private Acts and Public Actions: The Canadian Response to the Problem of Sexually Transmitted Disease in the Twentieth Century†

IN THE HISTORY of sexually transmitted disease (STD), simple monistic theories have regularly been put forward to explain why people have found it so difficult to cope with the problem. These arguments were, and remain, attractive because they appear decisive, clear and optimistic: with an explanation comes a prescription for action. Generally, it is argued that in the past these diseases were not dealt with effectively because medical measures were subordinated to social expectations or uses.¹ It follows that the problem could be overcome if society were to approach the problem in a rational scientific manner, extending the full benefits of medicine to everyone in need.

The record of efforts in Canada undermines this argument. Since World War I Canadian governments at all levels have been extensively involved in efforts to cope with sexually transmitted disease. Heavy emphasis was placed on medical measures—diagnosis, treatment, and public health regulations. These efforts were directed at eliminating the diseases from the community or reducing their prevalence to a very low level, in imitation of the successful actions to eliminate smallpox, typhus, and tuberculosis.

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† The Jason A. Hannah Medal Address, Université Laval, 7 June, 1989.

1 For example, S. Buckley and J.P. Dickin McGinnis, "Venereal Disease and Public Health Reform in Canada," *Canadian Historical Review* 63 (1982) 349–50, argue that "concentration on venereal disease as a social, rather than a health, problem undermined the effectiveness of the campaign by reinforcing the old stigma attached to having the disease and, by association, to being treated for it." A.M. Brandt, *No Magic Bullet: A Social History of Venereal Disease Control in the United States since 1880* (New York and Oxford: Oxford University Press 1985) pp. 5–6, maintains that VD has come to serve social purposes, chiefly the control of sexuality and individual conduct, and "in its transformation from a biological entity to a social symbol, venereal disease has defied control. . . . So long as these social uses of the diseases have dominated medical and public approaches, therapeutic approaches to the problem have necessarily remained secondary"; consequently efforts to decrease the prevalence of the diseases in the community have been impeded.

This approach, as we are all aware, turned out to be very difficult. The debate over the explanation for this turn of events has grown intense over the last ten years or so, particularly in response to the phenomenon of AIDS. The discussion of where the real problems lie and how we should cope with them has largely turned into a struggle between two schools of thought.²

The first could be called the Bio-Medical School. Its adherents are largely medical researchers and physicians, together with a certain number of mainstream journalists. Inspired by the germ theory, now just over a hundred years old, these people focus on the cause, course, and diagnosis of diseases, and on pharmaceutical remedies. With adequate medical facilities, they argue, the problem could be wrestled to the ground. But there remain a good many problems arising from the challenges presented by the causative organisms and the difficulties in developing tests and drugs. Still, they find grounds for hope, noting, for example, the speed with which researchers were able to identify AIDS, its course and etiology. And indeed, the history of AIDS does include the fastest succession of breakthroughs in the history of sexually transmitted disease. Nonetheless, even when medical resources were greatest and remedies were most effective, there was a substantial problem. Something else affected disease patterns. Most people are aware that venereal disease carries a stigma which exacerbates conditions. Writers in this school generally acknowledge that sexually transmitted diseases have a social dimension but often they separate it out and do not accord it sufficient attention.

The second group could be called the Social Construction School. Its adherents are generally "literary intellectuals," university scholars in the arts divisions, particularly history, literary studies, political science, and sociology, along with certain journalists and essayists like Susan Sontag. Such grouping suggests something about the social structures of the debate. Their attention focuses on precisely what the first school glosses over. Inspired by the deconstructionist writers and people like Michel Foucault, they argue that disease is a cultural phenomenon as well as a biological one. The way we talk about illness influences the way we experience it and the way we respond to it in others. Medical knowledge, they maintain, is to an important extent a socially constructed and determined belief system. There are many preconceptions and assumptions imbedded in scientific inquiry and medical practice. The Social Construction School looks beyond medicine to the interplay among the physical world, social power, and language in which biological and social processes are labelled "disease." Throughout history, people have attached moral significance to illness, especially diseases without a cure or with a highly contagious nature. Because syphilis, gonorrhea, and other diseases were known to be primarily sexually transmitted, they acquired a powerful

2 Two notable review articles are C. Rosenberg, "Disease and Social Order in America: Perceptions and Expectations," in E. Fee and D. M. Fox, eds., *AIDS: the Burden of History* (Berkeley and Los Angeles: University of California Press 1988) pp. 12-32; and R. Goldstein, "Bishop Berkeley's Virus: The Two Cultures of AIDS," *Village Voice* 14 March 1989, pp. 49-51.

metaphorical meaning: they became symptoms of moral disorder and social decay. Thus, some people think of promiscuity, homosexuality, and drug abuse, not HIV itself, as the "cause" of the AIDS disaster. In accounting for our difficulties with STD, these writers emphasize the socio-political elements. For them the problem lies, as Alan Brandt put it, in the social uses of sexually transmitted disease. Often they give bio-medical matters little attention. There is a tendency to downplay or ignore the tangibility of microorganisms and their effects on the body, and the difficulties in developing therapies to counter them.

Both schools focus heavily on their "half" of the issue—the bio-medical, or the socio-political. Both have a partial explanation for conditions but their hostility towards each other produces incomplete images of the STD problem, and that produces skewed responses by government and by groups responding to and struggling with politicians and bureaucrats.

The record of the Canadian response to the problem of sexually transmitted disease suggests that the two lines of analysis must be combined. STD is a complex problem with no easy solution. At the risk of oversimplifying matters, I would group the reasons into five categories: biological, medical, social, personal, and economic, each compounding the effects of the others. A society's response to the problem of STD, or any other disease, is shaped by the biological phenomenon, the ability to diagnose and treat physical disorders, the person's reaction to illness, and the social perception of disease, while the scope of the measures adopted is influenced by the material resources of the community at any particular time. What makes STD such a painful problem for Canadians and for others around the world is that there are significant limitations to medicine's ability to deal with the biological problem. The locus of the problem, together with the limitations of our abilities to cope, creates a space for a cultural response that departs from physical realities in an attempt to achieve cultural objectives. This social process then further impedes attempts to resolve the problem by medical means.

THE DISEASES

At least twenty-six "sexually transmitted diseases" have been identified. Six are particularly noteworthy: syphilis, gonorrhea, non-specific urethritis (NSU, a malady similar to gonorrhea), chlamydia (often the cause of NSU), herpes, and the acquired immunodeficiency syndrome (AIDS). These diseases present a range of challenges. Recognizing them was and is not easy because they often resemble other diseases or disorders, and in any event, early signs can be very subtle or non-existent. Syphilis in particular has a wide range of signs and symptoms which may lead the individual and doctors to mistake it for other maladies. The problem with most STDs is that the majority of patients have no obvious signs or symptoms for a significant amount of time. In women, some diseases, particularly gonorrhea, NSU, and chlamydia frequently cause no pain and provide no obvious signs until the infection is well advanced. Long latent

periods make some diseases especially problematic, particularly the later complications of syphilis and AIDS. When it first appeared, AIDS was hard to recognize because it debilitated the immune system and what ultimately appeared to be ailing the patient was one of several "opportunistic" infections that cause a range of ailments. All these sexually transmitted diseases can ultimately be painful and cause temporary or permanent damage to the body. Their psychological effect is compounded by their involvement in two great concerns of all human beings: reproduction and life. Some can leave a patient sterile. Some may kill.

THE EPIDEMIOLOGICAL PICTURE I

The epidemiological picture has always been cloudy. Because reliable statistics are difficult to produce, it has been necessary to estimate conditions from limited information. Considerable variation is evident between the pessimists who would see STD everywhere and the optimists who accept that the diseases are certainly in evidence but refuse to accept that great portions of the community are infected.

Venereal disease has been wide-spread throughout the western world since at least the later nineteenth century. In Canada, estimates made shortly before World War I suggested that between 5 and 15 percent of all Canadians had syphilis and several times as many had gonorrhea at some time in their life. In 1916 the Toronto General Hospital started doing routine tests on all public ward patients. During the first year between 12 and 13 percent tested positive for syphilis. But this figure simply reflects conditions in the hospital population. In assessing conditions in the community, physicians tended to believe that their patients reflected general conditions more than was probably the case. The prevalence of STD was probably not as high as they estimated, but all the signs still indicated that it was remarkably widespread.

During World War I, Canadians discovered to their dismay that their army had the highest incidence of venereal infection in Western Europe. At its peak, in 1915, the number of cases amounted to 28.7 percent of men in the Canadian Expeditionary Force. By the end of the war, there was a total of 66,083 cases, suggesting that 15.8 percent of the CEF had a venereal infection during the war. But records were not kept in the best of order and some of these cases were bound to be repeat infections or "relapses." Still, the figures were very disturbing.

PUBLIC ACTION

The serious indications of the amount of venereal infection in the general public, and the appalling record of the armed forces during the Great War, persuaded some Canadians that extensive action was necessary. It was accepted that complex problems entailed complex solutions, and given the large re-

sources required in material, manpower, and money, government would have to become involved. Indeed, public money would have to be invested simply because tests and drugs were so expensive that many in need of care could not afford them.

In 1918 and 1919 most provinces passed special legislation to control STD. Of those that did not, Quebec followed in 1920 and Prince Edward Island finally did the same in 1929. From then to now all provinces, including Newfoundland, have had "venereal disease acts" and in the case of some, notably Ontario, much of the content of the original statute remains on the books without substantial amendment.

The terms of these acts and the regulations made under them were much the same across the country. Each specified the diseases involved, who could treat them, and what they could use. The legislation gave regular practitioners a monopoly of health care in this area by forbidding all others from treating STD or advertising and selling remedies, and it backed the prohibition by stiff penalties. Anyone with an infection had to seek treatment and all cases were to be reported to the board or department of health. Reports were to be strictly confidential, and any kind of false statement would be subject to punishment. Anyone knowingly infecting another person was subject to fines or imprisonment. A medical health officer or other government official had the power to enter any house if he had reason to believe someone there might be infected, look into the condition of people present, and compel those found to have a sexually transmitted disease to get treatment. Treatment centres were to be opened and operated by municipalities with the financial assistance of the provincial government. Diagnosis and treatment were likewise to be funded by government so that anyone needing care could receive it without direct charge. The provincial governments also undertook to perform tests for patients of private physicians and supply drugs to them at no charge. These provisions represented one of the first occasions in Canada when public money was committed to a health program in which diagnosis and treatment were offered free of charge to anyone in need.

Under the vague terms of the British North America Act, almost all aspects of public health appeared to be provincial responsibilities. At this time, however, Ottawa decided to become more involved. A federal Department of Health was created in 1919, and one of its principal mandates was STD control. The idea was that the Department would serve as a coordinating centre for health work and would assist provincial programs financially. Federal assistance came with certain conditions: each province had to organize services along certain lines to qualify for assistance. Thus by the device of grants-in-aid Ottawa was able to dictate what form provincial programs should take.

The VD campaign was divided into five elements by officials at the time. First, there was a series of medical measures: diagnostic services provided by provincial laboratories, treatment free of charge at special clinics and hospitals, treatment of anyone in custody who had VD, and the provision of free diagnostic

services and drugs for private physicians treating other patients. The second, "social work," comprised various measures aimed at getting patients to complete treatment, including what was later called "contact tracing" to identify others who might be infected and get them treated. The third element, "law enforcement," covered the implementation of laws and regulations aimed at curbing the spread of STD by preventing various activities ranging from the sale of "quack remedies" to sexual activity after learning that one was infected. "Statistics," the fourth element, encompassed epidemiological work: the bid to trace patterns of infection and progress in controlling the epidemic. The fifth element was "education": measures aimed at disseminating information on the diseases, how to avoid them, and how they might be treated. With few modifications these have been the arrangements from 1919 to 1989.

RESULTS: THE EPIDEMIOLOGICAL PICTURE II

The results of the STD programs between the two world wars were far from clear. Minor sexually transmitted diseases declined markedly. The most severe complications of syphilis, gonorrhea, and NSU became less common. But the incidence of new cases of the principal diseases did not change much. It was impossible to draw any firm conclusion from the figures because reporting by physicians, hospitals and government clinics was erratic and far from complete at any time. Still, physicians and officials believed that conditions were improving, if only because people were getting better medical care.

With the advent of World War II, the incidence of sexually transmitted diseases in the armed forces rose at a striking rate. The trend could have been predicted from the experience of World War I, but at least the incidence of STD in the Canadian armed forces was not as spectacular as it had been in the CEF. The highest yearly averages were between 6 percent and 7 percent of strength. In the civilian population, the number of reported cases of syphilis and gonorrhea had been rising since 1937. Despite problems in reporting, the rise in numbers clearly reflected an increase in infection. Officials were shocked by the way figures rose five-fold between 1939 and 1945. In 1945 there were 25,237 cases of gonorrhea and 15,279 cases of syphilis. This proved to be the highest number of reported public cases of syphilis during the twentieth century.

The federal and provincial governments intensified their campaigns between 1943 and 1947. The decade between 1943 and 1953 saw one of the most vigorous efforts to eliminate STD in the century. This time, the government's public health measures seemed to be achieving their goal. The prevalence of STD in Canada declined steeply from the later 1940s to the mid-1950s. There was a firm belief that the prevalence of such diseases in Canadian communities was in rapid decline, much as it was across the western world. It looked as though sexually transmitted diseases, with the possible exception of gonorrhea, would soon be relatively rare maladies. But in the mid-1950s, the rates of infection stopped falling; the favourable trends levelled off.

From the early 1960s to the early 1980s the prevalence and incidence of sexually transmitted disease in Canada rose, as they did across the western world. Most STDs have not been declared reportable by government regulations in Canada but the two classic diseases, gonorrhea and syphilis, have long been, and the figures are telling. At first numbers increased slowly but they shot up at the end of the 1960s. They continued to increase through the 1970s before declining somewhat in the 1980s. The increase was largely due to gonorrhea and NSU (chlamydia in particular, as was later determined). Syphilis did not rise as much. The rate of infection for gonorrhea rose from 95.2 per 100,000 in 1962, to 129.0 in 1969, to 222.6 in 1975. The trend continued until in 1981 when figures reached a peak of 56,336 reported cases, a rate of 233.6 per 100,000, the highest figure ever recorded for gonorrhea. Officials, however, believed that only a fraction of cases were reported, and estimated that the number of cases per annum was between two and three times the number reported. NSU, and with it chlamydia, was estimated to be three times as common as gonorrhea and, therefore, there were around 300,000 cases a year. To this already distressing situation was added another trouble: a rapidly accelerating incidence of genital herpes. Estimates varied from 24,000 to 54,000 cases a year by 1987. But the problem with gonorrhea began to diminish. Figures slumped after 1981; there were 40,741 cases in 1985 and half as many in 1988.

From 1981 on, Canadians faced the spectre of AIDS. By comparison with other sexually transmitted diseases, the figures were small. The total number of reported cases rose from 22 in 1982 to 2,500 in early 1989, half of whom had already died. But since the disease appeared to be fatal in all cases, these figures were a shock. In Canada, it first appeared among homosexual men but soon other groups developed the disease, most notably hemophiliacs, patients who received blood transfusions, and intravenous drug users. Other people were infected through sexual intercourse, and, among drug users, through sharing needles. Canadian cases, however, continued predominantly to be gay men aged twenty to fifty.

HOW TO ACCOUNT FOR THE RESULTS?

Political Will and Public Funding

The effectiveness of STD control was tied to the commitment of Canadian governments, and this rose and fell over seven decades. As happens in many public health problems, action was intensified by "crises," usually recognized as an obvious, easily demonstrated surge in incidence revealed by statistics. Expenditure was high from about 1918 to 1924, then declined slowly from 1925 to 1931, reaching its lowest levels in the 1930s. The federal grant was actually terminated in 1931 and only reinstated in 1938. In the 1930s the decline in government spending was the effect of the Depression, which prompted cuts in expenditure almost everywhere. In such circumstances, it is particularly re-

markable that the provinces and municipalities continued to finance facilities for STD control. In terms of the total amount spent, expenditure at all levels of government in most parts of Canada rose steeply in the 1940s, then dropped to lower levels during the 1950s and early 1960s. This second decline was due to the perception that STD was decreasing and therefore less had to be done. Funding was completely altered in the 1960s with the advent of public health insurance. Special allocations for STD control virtually vanished into the general funding arrangements. STD control was not thereby neglected, but it ceased to be the focus of special provisions, except for the occasional special research or project grant. From the mid-1960s through the 1980s expenditure steadily rose, but it did not always keep pace with costs, leading to gaps between a desired level of care and actual care. Moreover, the new arrangements reduced the profile of STD in health work—it was subsumed in the larger operation.

Funding, though allocated in lump sums, was distributed to particular projects, and the distribution is revealing. From 1917 to 1983 the largest part of public money always went towards medical measures. The figure seldom dropped below 85 percent of total allocations by federal and provincial governments. Much less was spent directly on education. Even less was spent on "social services" such as contact tracing, patient counseling, and ensuring that patients saw treatment through to a cure. Funding for STD research has always been very low. In 1983 it amounted to 0.3 percent of money committed to medical research. In this field of medicine, unlike some others, Canadians have generally preferred to wait for developments in other countries. The pattern changed only in 1984, with a special allocation for the AIDS campaign. Still, the sums were relatively small. It was thought that little could be done by way of treatment and therefore public money should be concentrated on testing and education, which appeared to be among the few effective things that government could do.

Medical Capabilities

Limitations in medical capabilities have had a significant influence on results, something people are unaccustomed to in the antibiotic era.

There are actually very few tests for sexually transmitted diseases. In 1906 the Wassermann test was introduced. This detected the presence of the specific antibodies in blood formed to eliminate the spirochetes that caused syphilis. Performing the test was a complicated task that could only be done by specialists. It was also expensive. Moreover, it did not always work well. There were a certain number of "false-positive" results, when the test read positive but spirochetes were not present. On other occasions, the test remained positive after the patient was plainly cured. In the following decades other tests were devised, and the accuracy and certainty of detection improved. But it was still necessary for experts to perform them, and the costs did not diminish.

It has proved very difficult to develop satisfactory serological tests for the presence of the organisms that cause gonorrhea, NSU, and chlamydia. Detection

generally rests on signs and symptoms and on identification of the organism in a laboratory by direct microscopic evaluation or by culture. There are a couple of antigen detection techniques for chlamydia but they are not entirely satisfactory. This shortcoming complicates the problem arising from the fact that the diseases are often asymptomatic for a long time, especially in women, in whom the diseases can cause serious complications, both for them and for newborns. By contrast, the onset of herpes is painfully evident, as are all subsequent outbreaks. There is also an enzyme immunoassay test that detects the herpes antigen.

In a relatively short time, a test was developed to detect the presence of the human immunodeficiency virus in an individual by identifying the antibody for it. Manifestations of the disease, eventually called AIDS, were first noted in 1981. The causative virus was identified in 1983 and the following year the Enzyme-linked Immunosorbent Assay (ELISA) test was developed. Unfortunately, like tests for syphilis, this one has proved somewhat inconsistent. A certain number of false-positive results occur. It also appears that there can be a fairly long period during which a person infected with HIV does not test positive. ELISA can give a "false negative" reading because the body does not always produce antibodies rapidly enough to be detected when the test is performed. It is still very useful, and other tests have since come into use to corroborate results.

Of the major sexually transmitted diseases, syphilis was actually the most effectively treated, first with Salvarsan and, after 1943, with penicillin. Salvarsan was introduced in 1910 by Paul Ehrlich. Several shots of it were sufficient to cure many cases of syphilis rapidly, in great contrast to former remedies that required months and years without much assurance of success. This drug, a complex organic compound containing arsenic, ushered in a new era in medicine, which saw the regular introduction and use of elaborate synthetic compounds that would have a specific action on particular disease-causing organisms. Salvarsan, however, had serious side-effects in some patients. Doses had to be reduced and cures were not always quick. Its effect was not as specific as Ehrlich had hoped.

With the chemotherapeutic era came an increasing dependence on large pharmaceutical firms for the development and supply of drugs. Salvarsan and other drugs that followed had to be synthesized with elaborate equipment. Production was expensive; so was research. Companies charged more for their products to cover expenses and to assure a good profit. Patent laws led to close control of supply and cost by private firms who developed the drugs or obtained the licence to market them. All this contributed to a steep rise in drug costs, an important element in the economics of the STD problem. Treating these diseases would be expensive—no matter who paid. Yet despite the problems it presents, reliance on private companies for research and production has persisted throughout the twentieth century. As in many other countries, Canadians relied on the private sector for research and, therefore, on its profit mechanism.

In 1943 it was discovered that penicillin, the first of the "antibiotics," worked very rapidly and afforded a complete and decisive cure for syphilis. In the next few years, physicians converted to the new remedy. Penicillin, in one form or another, remained the treatment of choice from the 1940s to the 1980s, though other antibiotics developed in the 1950s and early 1960s were also used on occasion.

Until the later 1930s all that could be done for cases of gonorrhea and NSU was to apply simple local antiseptics, usually solutions of silver nitrate or potassium permanganate. Their action was slow and not especially effective. Then in 1936 another product of the chemotherapeutic revolution appeared—sulphanilamide and, in its train, the "sulpha drugs." At last it appeared that gonorrhea could be treated effectively. Unfortunately, the drugs were also seriously toxic and could prompt severe reactions. Worse still, the bacteria adapted to them with alarming rapidity. By the early 1940s there were several strains of "sulpha-resistant" gonococci. It is not surprising, therefore, that the statistics do not reflect this apparent medical breakthrough.

Penicillin appeared to transform the situation in the mid-1940s. Results at first were highly gratifying: infections were rapidly cleared up. It took some time for this result to be reflected in statistics, not just because it took a while for penicillin to enter use in all locations, but also because the number of infections rose sharply at the very same time. Still, in the later 1940s and early 1950s, epidemiological studies found the prevalence of gonorrhea declining markedly. It appeared as though the means existed to eliminate VD.

By the mid-1950s the favourable trends had levelled off. At the same time a disturbing new phenomenon appeared: strains of the gonococcus were developing a resistance to penicillin. Doses had to be increased and cures were not as rapid as before. Then, in the mid-1970s it was discovered that there were strains of gonococci which produced an enzyme that broke down penicillin. In the 1980s, certain strains developed a resistance to other antibiotics.

NSU, particularly what was later identified as chlamydia, was also difficult to treat. Penicillin was often found to be ineffective, and it was only with the introduction of other antibiotics, notably tetracycline, that infections could be thoroughly cleared up.

There is still no cure for herpes or AIDS, both of which are caused by viruses. Medical science has found it difficult to develop a drug that will act specifically on a virus without also affecting cells in the human host. We do not know enough about the virus as an organism or the metabolic processes of both viruses and humans. The challenge lies in identifying something in the virus metabolism that can be affected by a man-made compound but which is also sufficiently different from things in the many metabolic processes of the human body so as not to poison the human organism as well as the virus. Moreover, the human immunodeficiency virus mutates rapidly, making it all the more difficult to develop a drug.

In the 1970s and 1980s drugs were developed to ease the patient's condition.

Several can reduce the severity of outbreaks of herpes and relieve the accompanying pain. By 1987, six years after AIDS was identified, one drug had been developed which clearly affected the virus itself: azidothymidine (AZT, trade name Retrovir). It cannot stop the disease but it can slow its progress. Unfortunately, the drug's action is not limited to the virus itself; AZT also has a severe effect on certain human tissues. To help reduce the devastation of infections, drugs were also developed to combat the opportunistic organisms that take advantage of the debilitated immune system. Some of these drugs help some patients considerably, for a limited time, so long as there is at least some response from the immune system, but in many cases the side effects are serious. This absence of a "cure" means that medical measures on which Canadians have relied so heavily since 1919 are of limited effect.

Operational Problems and Social Realities

There were other problems in the measures to cope with sexually transmitted disease, problems which had been noted periodically since the 1920s.

Organizers frequently had to acknowledge that VD clinics were not very attractive places to visit. The buildings themselves were often not pleasant and many clinics suffered from overcrowding. Clinics were often remote from hospitals and laboratories, and so teaching and research were inhibited, and physicians found it difficult to consult with specialists in other areas about a particular case. Doctors often considered the work boring or unattractive and few were encouraged to specialize. Most doctors worked in clinics on a sessional basis and their main interest lay elsewhere in medicine. Many patients disliked the idea of going somewhere special for STD problems. They were anxious about privacy and the confidentiality of records. The persistent negative view of the diseases in the community encouraged many to seek the most discreet treatment, that is, in the office of a private physician.

From the beginning, the majority of patients preferred to go to private physicians. In the 1970s and 1980s, after the introduction of public health insurance made this practice even easier, 80 percent of STD patients were treated this way. Many physicians (the majority, some commentators maintained) were not sufficiently skilled to diagnose and manage the disease properly. Teaching in medical schools was inadequate, and there was no opportunity to do specialist training in venereology in Canada. The record of private physicians in reporting and contact tracing was persistently poor. Generally, doctors were concerned about freeing a patient from disease but not about eliminating disease from the community. Their attention was on the individual patient, very much the traditional focus of medical practice. Other reasons given for physicians' conduct are fear of losing patients, fear of appearing to penalize patients, and fear of losing patients' cooperation because of their concern that their condition may become known to others. The issue of the confidentiality of medical records also motivated some physicians to avoid making any sort of report on the patients they treated.

Among health care professionals, the level of knowledge about STD was always a problem, and it became acute with AIDS. Many physicians, surgeons, nurses, and dentists were alarmed by the disease. Some were reluctant to handle cases, though the problem was less severe in Canada than in the United States, where many health care workers initially refused to treat AIDS patients. These difficulties have persisted through the 1980s, further hampering efforts to cope with the disease.

Testing was vital to the success of measures aimed at identifying cases but resources were often limited and facilities strained. Provincial laboratories often operated near full capacity. In the 1970s and 1980s screening for STDs increased, especially with the rise in gonorrhea and chlamydia. Heavy workload and restricted budgets limited the performance of many laboratories and left little opportunity to improve operations and develop new methods. At the same time, minimal government support meant that all forms of STD research in Canada were limited. These problems increased with the advent of AIDS.

The attitudes and actions of people with an STD also affected the results of measures aimed at reducing the prevalence of disease in Canada. Many individuals did not recognize that they had an infection until the disease had progressed for some time; signs and symptoms were often not known, and many infections were asymptomatic for a long period. Many took a long time to seek medical care, even after becoming aware of their condition. In a broader context, many patients who came to a physician were afraid to be screened for STD. People with an infection had to contend with increasing social divisions between age groups and between the dominant culture and many sub-cultures. They also faced the stigma that was still attached to venereal infection. Physicians might be perceived as aligned with the moral establishment and, therefore, any bid for help would bring with it a critical examination of behaviour and attitudes. Not surprisingly, it also proved difficult to ensure patient cooperation both in seeing treatment through to a cure and in follow-up care. Many patients left before treatment was completed, usually when they were relieved of the symptoms; this problem is particularly serious in cases of tenacious infections by drug-resistant organisms. Other patients were quickly re-exposed.

Contact tracing has produced limited results. While in theory it should be effective, in practice it has not been. In terms of the number of cases brought to treatment, contact tracing has not accomplished much, especially considering that a certain number would be sent by people who first came in with an infection. Casual contacts by definition generally do not lead to the information necessary to locate someone suspected of having STD: details in reports are often sketchy. Tracing has also been hampered by social and legal issues. Since prostitution and homosexuality were for a long time classed as "immoral" and "illegal," participants were not likely to cooperate much in disease control if it was likely to land them in trouble. Such measures have also been costly in terms of civil liberties. Even without these problems, tracing is difficult simply

because it is enormously time-consuming and labour-intensive, and consequently expensive. Moreover, it is often difficult to find individuals able and willing to do this particular work. Tracing also requires the cooperation of various individuals and agencies, such as doctors, social workers, and police. Results are diminished by the inevitable "friction" in any operation involving many parties, and by breakdowns in communication. Finally, because of its police-like quality, this measure is also likely to drive people underground, to avoid treatment facilities precisely because of the measures associated with them.

Since World War I, records of tests almost always have named the individual. A certain amount of criticism was directed at this practice from time to time because, it was argued, records naming individuals might discourage those most in need of tests. Extra care should be taken because of the damaging social ramifications of being known to have a sexually transmitted disease—or even to be known to have gone for a test. Assurances were given that medical records were confidential, but this principle was not always realized in practice. Nonetheless, government officials regularly rejected the proposal of anonymous testing. The problems of homophobia and fear of AIDS made non-nominal testing a pressing issue in the 1980s. With the exception of the province of Quebec, however, no jurisdiction went along with the measure, though informal arrangements existed in some cities elsewhere.

Sexual Activity

The rising incidence of STD also reflects on the sexual activity of Canadians. The dramatic increase between 1937 and 1947 was due at the start to the Depression-related decline of measures aimed at eliminating infection. Measures were greatly expanded during World War II, but there was also a marked increase in sexual activity, as noted both by contemporaries and later historians. War brought considerable social upheaval and increased mobility which compounded the problem.

In the 1960s and 1970s it was common to blame the increase in incidence on "the three P's": permissiveness, promiscuity, and the Pill. Condoms, formerly the principal contraceptive device, provided a barrier between the two bodies at the point of intimate contact. Oral contraceptives and intra-uterine devices (IUDs) did not. Increasing availability of all kinds of contraceptives, and social conditions favouring increased sexual activity, together afforded disease-causing organisms more opportunities to pass from body to body. STD came to be seen by many in the community as revenge against the "sexual revolution." The new sexual freedom undoubtedly affected the spread of STDs. In certain circles at least, premarital sex, activity at lower ages, multiple partners, and oral and anal sex were increasingly accepted and practised. Changes in behaviour, however, were only a matter of degree and, as patterns in earlier decades reveal, the differences can be exaggerated. Other causes less easy to document undoubtedly played a role. The demographic picture was changing.

There was a great increase in the number of people in their teens and twenties, age groups traditionally among the most active sexually. The population was increasingly urban and this concentration of people affected disease patterns. So did the improvement of mass transportation, increased use of cars, and faster, cheaper and more plentiful global travel.

Discussion of homosexuality, and the association of homosexual activities with STD, did not appear in Canadian medical journals until the early 1950s, after Kinsey's famous 1947 report on male sexuality, which heavily influenced early discussions. Indeed, one could almost say that for the first half of the twentieth century, very much in contrast to perceptions in the second half, STD was perceived as a heterosexual problem. The change resulted not only from growing epidemiological knowledge, but also from the way homosexuality rapidly entered discussions after Kinsey: it became something many more people thought and talked about. Observers found that figures for male homosexuals were distinct from the general patterns: sexually transmitted diseases were remarkably prevalent in the homosexual community; levels were distinctly higher than in the general population; and given the ratio of straight to gay men, a relatively high number of cases occurred among gays. They attributed the patterns among male homosexuals to a number of factors: a certain portion of homosexual males were exceptionally promiscuous, and gay men in general operated within a smaller sexual population than heterosexuals. Promiscuous behaviour and a relatively small group increased the chances of exposure. Then too, there was a greater difficulty in seeing or otherwise detecting some infections. Conditions were exacerbated by the hostile attitude of the general public, including some physicians, toward gays, a state of affairs that impeded medical care. Homosexuals often found it hard to seek treatment because of social stigmas and legal sanctions. Homosexuality remained a criminal offence until 1969 when the laws against it were considerably revised though not eliminated. A range of activities remained criminal offences, a state of affairs that persisted after the 1987 criminal code reforms.

These social considerations shift attention to the other element in STD programs—education.

Public Information: The Education Programs

Efforts to inform the Canadian public about VD really began at the end of World War I. Those who pushed for action argued that there was a high level of ignorance and that existing arrangements were profoundly inadequate. Public sex education was a tricky proposal. Sex was tangled in a complex web of social constructions and STD was steeped in moral metaphors. Government action was full of typical Canadian compromises. Ottawa and the provinces undertook only limited programs of their own, with much of their effort directed to the production of posters and pamphlets. Most of the actual work with the public they entrusted to private organizations specially interested in health and education. By far the most important in the early years was the Canadian National

Council for Combating Venereal Disease, founded in 1919, renamed the Canadian Social Hygiene Council in 1922, and the Health League of Canada in 1935.

1 Measures and Methods

The period following immediately on World War I was one of the most notable eras in the history of Canadian efforts to inform the public about STD. Many techniques then employed for the first time became standard in the decades that followed. The most common forms of information were pamphlets distributed in a wide diversity of ways. Generally, different pamphlets were produced for men and women. Those for men were more explicit about both human anatomy and the diseases. In addition, organizers relied on public lectures and newspaper and magazine articles. They made extensive use of motion pictures, experimenting with feature films and documentaries, some of which were short animated cartoons. Limited use was made of radio broadcasts but, since anyone could receive them, the discussion was carefully restricted to a general overview of the problem. Displays (some open, others enclosed) were set up at annual fairs in towns and cities including the Canadian National Exhibition in Toronto and the Pacific National Exhibition in Vancouver.

A considerable improvement in public awareness and understanding could have developed through schools, where individuals learned much of the basic information they would have about the world around them. Some organizers wanted to extend their efforts to the schools, but they met with resistance. Throughout the inter-war years there was very little sex education in public schools. Although schools of the day had assumed the task of teaching children about all manner of subjects bearing on the body—nutrition, cooking, posture, hygiene, and biology—they considered sex a separate matter best entrusted to parents in the privacy of the home. Parents, as organizers pointed out, were woefully ignorant, so efforts were directed at informing the parents. It could only be hoped that they, in turn, would instruct their children. The sexually active young, who were among the people most likely to get infected, remained poorly informed.

Education programs about STDs declined markedly across Canada between 1925 and 1929. During most of the 1930s they were very limited. Efforts to inform the public slowly revived during World War II. Those urging action noted that many people avoided discussing venereal disease and old fallacies were still being repeated, a sad comment on earlier education efforts. In 1942, British Columbia began school lectures accompanied with films, but no other province followed this lead and even in B.C. the classes did not outlast the war. Efforts intensified when the federal government reestablished its VD division in 1943. From then until 1947 there was an unprecedented outpouring of material on sexually transmitted diseases. After that, despite bids to maintain the momentum, the campaign gradually declined, much as it had in the 1920s. By 1949 the education program had fizzled out.

During the 1950s and early 1960s little was said or done by way of STD education in Canada. With penicillin, STD seemed no longer to be a public health crisis and the attitude among government and school officials appears to have been that it was best not to discuss a topic that could only cause problems, because of the issues it raised and the ideas it might put into people's heads. Paradoxically, medical capabilities if anything enabled knowledge to be withheld.

2 Information and Advice

The general approach of educators remained the same from the 1920s to the 1960s. A small amount of information about the diseases was provided. Canadians were told that treatment was widely available, free of charge to anyone who developed an infection. Information was generally accurate—as far as it went—but remained sketchy. While it might be said that the public neither wanted nor would have bothered with much more, some specific information that was omitted would have been useful; for example, illustrations in pamphlets were rare. From the 1920s to the 1940s many lectures and film showings were sexually segregated and the content for each sex was slightly different. Invariably, the men were treated to more detailed descriptions. Women were treated with deference and in the presentations medical facts were limited and veiled in euphemisms. The old concept of pure and impure women persisted, and with it the assumption that women had a greater need for modesty and a greater potential for shame. Sexual knowledge itself was considered to be potentially sordid and therefore had to be meted out in careful doses. No one was prepared to have universally available pamphlets that discussed the full subject for everyone. The choice of message was filtered through a moral screen; social considerations doubled with medical concerns in health promotion to determine the content of pamphlets and lectures.

When it came to the issue of safeguarding themselves from disease, people were generally given one piece of advice: "abstinence" was the best way to avoid infection. Occasionally the discussion went a little further and warned people that they should avoid certain individuals, those who were quick to have sex. Promiscuity did present a problem for STD control, in that it could increase a person's chances of being infected; sexual activity with numerous partners could thus be seen as "hazardous." To discuss this problem made sense, but the response of educators was simply to insist that people not have sex except with their spouse after marriage. That this was of limited use could have been forecast in advance. During both World Wars, officials in the armed forces, despairing of persuading men to avoid sex, reluctantly told them how to reduce chances of infection. In civilian circles, however, social expectations were more intense. The moral code was defended: sexually transmitted disease was still presented as grounds for restricting sexual behaviour. Exercising restraint might be difficult for some, people were told, but it was the only real way to protect oneself and one's loved ones from disease.

It took a long time before those involved in STD control—and the community as a whole—would realize that, rather than insisting on a certain conduct, it was necessary to give people sufficient information about STD so they could prevent infection or recognize its signs and symptoms. Some organizers from past decades, however, would argue that it was necessary to adjust the message and information to public attitudes in order to gain an essential degree of acceptance. Without that, the whole effort would backfire; people would ignore the material, or worse, insist that the whole operation cease. Against this position, it might be countered that while some information might seem unpalatable and therefore unacceptable, so are disfigurement, sterility, and death. If disease has both a biological and a cultural element, then it follows that an educational program must lead to a reconsideration of disease within a culture.

Only gradually did educators borrow from the practices of advertising and develop material closely suited to particular target groups, such as teenagers, prostitutes, and gays. From the beginning pamphlets, posters, and motion pictures used some popular language in discussing venereal disease, but for a long time there was little more effort to address particular people in ways they could readily understand, partly because the resources available were limited. For a long time, Canadians were parsimonious when it came to sex education. They lacked the political and social will to act effectively. This is one area in which the social constructions of disease clearly influenced what happened and what people experienced.

3 Modifying the Arrangements

Social changes and the increasing prevalence of sexually transmitted diseases in the 1960s prompted Canadians to adopt a more extensive policy on sex and STD education. Changes in education took place in a halting fashion from the mid-1960s onward. Provincial governments collaborated with community groups and public health organizations to revive efforts. From 1971 to 1973 there was an intensive education program in Ontario and elsewhere but, once again, it ran for only a few years before losing momentum. There was another period of intensified effort around 1977–78, especially in Ontario, Manitoba, and British Columbia. With the number of reported cases rising to astounding levels by the early 1980s, another major effort was made, this time nation-wide, with the assistance of the federal government.

The same tactics were employed in these education campaigns as in the first major campaign during the early 1920s. Organizers relied on pamphlets, posters, public displays, and notices or articles in papers and magazines, displays at fairs and exhibitions. Pamphlets in particular became more explicit and were illustrated. Radio and television, though powerful media, were still used very sparingly, and even then stations were prepared to censor material. In 1971 Ontario began the first telephone hotline for STD information, and since then many have been established. Educational films were produced, and in the 1980s material also appeared in video form. This time, much less was explicitly

directed at one sex or the other. Advice on how to prevent infection, however, was still limited. Public discussion of condoms really began only in the later 1970s.

Introduction of sex education at the secondary school level began in the later 1960s, but was controversial. A major stumbling block, as organizers across the country would repeatedly discover, was that teachers were inadequately informed and often afraid of leading such classes. School-based education on sex and STD also remained problematic because the information imparted was considered by some to be potentially damaging to the moral order. Conservatives wanted to restore "traditional values" (more often expressed positively in terms of "family life" rather than negatively by emphasizing prohibition of sexual activity). For many, the solution to the STD problem remained the same simple formula that had pervaded education since the 1910s: avoid casual sex. The amount of resistance to education programs should not be exaggerated. Surveys in the 1970s and 1980s revealed that a large majority of parents and children wanted schools to provide more information on sex and STD. But instruction in schools continued to be limited and deficient. Classes were often voluntary; the material was generally not at the right level, nor was the amount of information very great. Reports continued to reveal high levels of ignorance about STD among Canadian youth.

4 Responding to AIDS

With AIDS, as with STD in general, governments hesitated when it came to public education. The pattern of government response to the AIDS crisis is very much in keeping with its response to STD over the previous sixty years. The federal government avoided becoming involved at first, entrusting AIDS education to the Canadian Public Health Association, just as it had relied on the Canadian Social Hygiene Council in the 1920s and 1930s. Efforts increased in 1986, but became intense only in the summer of 1987. That fall, the federal government became directly involved. AIDS education remained uncoordinated for a long time, partly because of the reluctance of certain governments, notably those in Ottawa and Quebec City, but also because so many different bodies were involved: federal, provincial, and municipal governments, school boards, public health associations, and community groups. For a long time attention focused on those most affected—homosexual men—and little was done to ensure that a basic amount of information reached all Canadians.

Organizers of information programs still ran into difficulties getting cooperation from others. Condoms and anal intercourse were repugnant to many people, including members of the upper and middle classes who controlled so much of the information network in Canada—television and radio stations, newspapers, and school boards. Public health announcements told Canadians that AIDS was spread by "the exchange of body fluids," urged them to inform themselves, and indicated where they might find information. The AIDS crisis revealed how much the media were still influenced by the prevailing moral code

when it came to deciding what was fit for public broadcast. In 1987 many radio stations refused to run explicit AIDS notices. The government-owned CBC refused to broadcast certain notices on its television stations. The Canadian Association of Broadcasters at first rejected material and then in an elaborate public relations maneuver turned around and criticized governments for not putting up money to pay broadcasters for advertisements. Most stations were not prepared to run AIDS notices as a public service. As a result, little was heard or seen by people in most parts of Canada until the spring of 1988. There were other routes; for example, in March 1988 Ontario sent a pamphlet to every household in the province. By 1980 experience had shown that the best way to cope with STD was to get explicit, to provide accurate, clear, and brief statements of the facts. In 1987 and 1988 organizers were still working their way around to doing that with AIDS.

Only in 1987, six years after it was identified, did AIDS become a topic of instruction in public schools. Nonetheless, some other schools, and Catholic school boards as a whole, hesitated to implement an AIDS program. Bitter disputes developed over what would be said to the students. Several course outlines stressed abstinence as the best way to avoid AIDS and offered little other advice on how to prevent infection. Instead of responding to teenagers' feelings and preparing them for the real world, such programs set out to extend the period of life without sex. One rationale for this approach was that such a course was all that would be accepted by parents. Yet surveys determined that teenage sex was widespread. People were still unprepared to respond to the full nature of teenage sexuality. Surveys, however, also found that the great majority of both parents and children favoured more information in schools. The needs were recognized, but the political will was weak. There is a fine irony in the campaign slogan, "Don't die of ignorance."

A revolution in education leading to candid information did take place in some areas during the mid-1980s. It was the result of community-based groups taking on the task of education. They worked largely outside traditional information networks but specially for the communities that produced them. The most notable, predictably, was the gay community. Distrusting public authorities who in the past had been antipathetic towards them, gays resorted to their own organizations as early as 1983. Gay men became among the best informed about the disease, partly because it affected them in particular, partly because gay culture allowed for freer discussion of sex. "Safer sex" activities incorporating a set of carefully determined preventive measures were candidly discussed, and ingenious means were devised to make them more attractive. For example, the AIDS Committee of Toronto used frankly erotic pictures in its posters and pamphlets.

Outside the gay community there was not as much candour, at least until 1988. The first words of advice on how to avoid infection were just the same as the people heard in the first VD campaign: "abstain from sex." But educators realized that this would not suffice and in carefully guarded tones they went on to explain other ways to reduce the risks of infection. Information was seldom

detailed unless people sought it in a private forum. As a result, ignorance about AIDS remained high. Polls found that more than half the public held erroneous beliefs about the disease, how contagious it was, who might be infected, and how they might be infected. Nor were precautions much in evidence: few heterosexuals knew or followed safer-sex guidelines.

CONCLUSION

The failure to overcome the problem of sexually transmitted diseases despite medical measures highlights all five factors mentioned at the outset: biological, medical, social, personal, and economic.

During the twentieth century there has been a constant expectation that medical science would find technical ways to eliminate the diseases that threaten us. For decades Canadians have imagined that rapid cures are possible, and with them, problems such as sexually transmitted disease will be resolved. Not surprisingly, efforts to cope with STD over the past seventy years have concentrated heavily on medical measures. But the bio-medical challenges are still great; in emphasizing medical measures, Canadians overestimated the powers of medicine, and underestimated the nature of the diseases. Only in the age of AIDS have we finally come to recognize that social measures, especially education, are essential, and that is because there are things we cannot achieve by medical means. This lesson was glimpsed in the past, but the logic of the argument was never carried to its full extent. Yet there is a problem in turning to social measures, a problem bound up in our culture; we perceive these sexually transmitted diseases in a certain way and speak of them in certain terms. The social construction of disease has undermined medical efforts as much as have the nature of the organisms and the limitations of diagnosis and treatment.

The dream of rapid, effective treatment for sexually transmitted diseases reflects on the range of problems associated with them: the diversity of individual needs and sexual behaviour, the cost and complications of infection, diagnosis, treatment, and education. Decisive medical action would enable people to sweep them away. The solution would be brief and simple. Rapid, effective treatment would enable people to sidestep the complex problems of sexuality and morality. People would no longer need to wrestle with issues of behaviour and lifestyle. Indeed, this view is almost liberating; infections could be discreetly dealt with, and there would be less opportunity for those around the individual to impose on him or her their views of how individuals should behave. Rapid and effective treatment would also enable people to avoid the complex problem of education. It would not be necessary to ensure that everyone received detailed information.

The over-reliance on the medical model in the past reveals a reluctance to confront social issues squarely, a response that played to the prevailing moral tenor of each decade. Restrictions on what information could be presented

reinforced a particular value system. Health education was limited and hedged round with prohibitions on "sensitive" topics. In fact, the attitude of many Canadians to sex and sexually transmitted diseases prevented them from using their resources well. As a result, a public health problem was exacerbated. In their determined effort to be "scientific," Canadian organizers failed to deal effectively with the social dimension of disease. Attitudes in the general public, the medical profession, and the government were not adequately identified and, when necessary, reshaped.

The solution to the problem of sexually transmitted diseases, insofar as one can be found, lies in adjusting to bio-medical realities and to what we find in our fellow human beings. Medical facilities have been in existence for three-quarters of a century. The problem lies in the way we use them. We have an extensive and expensive education system. The problem lies in the way we use it. Adjustments in both could increase our medical abilities to deal with STD, and would address the cultural elements more effectively.

First, we need to devise an accessible health care system, one which will receive people easily and to which people will readily turn. It is important to refine our facilities so that we have a system that is sufficiently easy and non-threatening to encourage people to use it. This involves improving clinics and laboratory facilities, and instituting anonymous testing in place of contact tracing and nominal testing. It also involves improved training of health care professionals with regard to STD. Coercive measures in the past have most often proved to be either dead-letters or counter-productive. Fear, associated with "policing" (in the form of contact tracing) is only a retardant.

The problem, as some would quickly point out, is that signs and symptoms are often overlooked. Here education should come in. People who run risks should think in terms of having periodic check-ups. Emphasis has to shift to individual awareness, motivation, and cooperation—to voluntary action. This has to be distinguished from individual responsibility understood as a direct moral imperative. There has to be a desire for good health. Education becomes important not only in getting people to take preventive measures, but also in helping them to know what to look out for and where to go for check-ups.

Second, we really need much better health awareness. Disease is a cultural phenomenon as well as a biological one; therefore, we must attend to the cultural response. We need a thorough sex education system in all schools, and similar programs for the general public, including some targeted at high-risk groups. Education on STD during the twentieth century has been informal; people have received information from miscellaneous sources, largely when they were motivated to take it in. This method is not very effective. A national program involving both educators and physicians is necessary, including candid information about sexual needs and STD, and how to respond to and cope with them. Education needs to be undertaken within the context of a positive attitude towards sexuality, incorporating a recognition that it is a healthy normal aspect of human existence, and that there are different ways of being

sexual. It is not a matter of getting free of the social construction of disease and only presenting the "scientific facts"—that is not possible; rather, it is a matter of increasing awareness of the social construction and actively revising injurious elements. The reforms implemented should be aimed at improving the way we respond to STD; that is, they should enable us to live happier healthier lives, where happiness is allowed a personal definition and emphasis is placed on freedom from disease.

In discussing STD, many people have preferred to see the danger of infection as grounds for avoiding or restricting sexual activity. It is clear from the historical record that using STD as a means to scare people into adhering to a particular line of conduct established by a moral code has not worked; however, a belief in the efficacy of scare tactics speaks volumes for the role of fear in the lives of those who are their principal exponents. The great appeal of sex will ensure that activity persists. Therefore we should see sex, like most human activities, as having certain attendant risks that people should know about and know how to manage. We need to shift from a stress on avoidance to a discussion of adjustment. We also need to abandon a brief mention of the diseases in favour of a careful description of what to watch out for and what to do.

Political or social will remains a real problem. As experience over the past seventy years reveals, the federal system of government in Canada, and the role of churches in our school system means that such measures may well be implemented in an attenuated form. The problem is not so much the cost of the measures as the will to make the changes. Improved responses are likely to develop slowly, even with the pressure of AIDS. The "sexual revolutions" of the twentieth century and the feminist movement began to break down centuries-old attitudes and behaviour, but redefinition proved to be a slow process. Change takes generations. That is why the STD problem is not amenable to rapid solutions. The gravity of the problem, however, makes it imperative that Canadians commit themselves to this effort far more than they have been prepared to in the past. The most disturbing feature of the STD problem is the way a large part of the public, including the educated elite, compulsively avoids facing the seriousness of the problem, as is shown in the hope that science will find a way out and in the reluctance to tackle the business of restructuring the social construction of sex and sexually transmitted disease.

NOTE ON SOURCES

Primary Sources:

The activities of the federal and provincial governments are abundantly detailed in the records of the department of health and welfare. National Archives of Canada (NAC): RG 29. Some files also include a remarkable amount on the work of other organizations. The records of provincial departments are in their respective archives. Their holdings vary considerably. New Brunswick's modest collection runs from 1919 onward, making it one of the most complete. Ontario has a tremendous amount for the period from 1917 to

1927 but then there is a twelve-year gap. British Columbia's records begin in the second half of the 1930s. Other collections really only begin in the 1940s and remain quite limited until the 1960s. The actions taken in the armed forces are recorded in NAC: RG 9 and RG 24.

The archives of several organizations have useful material. The most important by far are the records of the Health League of Canada, NAC: MG 28 I 332, and the records of the Canadian Public Health Association.

Legislation is recorded in the published statutes of Canada and the provinces. Annual health reports of federal and provincial governments discuss measures and results. Statistics are also presented in *Venereal Diseases in Canada* (periodical reports), later *STD in Canada*, and *Canada Diseases Weekly Report*.

On AIDS, two reports are of particular note: *Report of the Canadian Bar Association, Ontario Committee to Study the Legal Implications of AIDS* (1986); Royal Society of Canada, *AIDS: A Perspective for Canadians* (1988).

Medical journals have many valuable articles and notices. Of particular use are *Canadian Family Physician*, *Canadian Journal of Public Health*, *Canadian Medical Association Journal*, *Canadian Nurse*, and *Union médicale du Canada*.

Newspapers vary in usefulness. For most of the period there is a certain amount in major papers, notably the *Globe and Mail* and *The Toronto Star*, and to a lesser extent *La Presse*, Montréal. Most other papers have very little coverage until recently, and even then it is sparse. Magazines, notably *Maclean's*, occasionally have large articles on STD, especially in the 1940s and 1980s.

Educational pamphlets are preserved in the records of the departments of health, the Health League, and the CPHA. Some are also to be found in the Canadian Gay Archives, Toronto, and in various community groups, such as AIDS Vancouver, the AIDS Committee of Toronto, le Comité SIDA Aide Montréal, and AIDS Action Now! Toronto. Films and videos are harder to locate. Some are preserved in the NAC's Moving Images and Sound Archives, Ottawa; others remain with the government departments and organizations that used them.

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Corticostatin Peptides[†]

CORTICOSTATINS (CS's) are a family of low molecular weight peptides, rich in arginine and cysteine, with the ability to inhibit ACTH stimulated glucocorticoid hormone biosynthesis in the adrenal gland (11). They show a high degree of specificity in that they do not inhibit the action of angiotensin II in the adrenal cortex which stimulates aldosterone biosynthesis. Four corticostatins have been isolated from rabbit lung extracts and peritoneal neutrophil extracts and one from human neutrophils. Among them corticostatin I (CSI) is the most potent with an I.D.₅₀ (half-maximum activity) of 25 nM. Corticostatin activity is different from other published inhibitory factors such as TGF-B (Transforming Growth Factor-B) and ANF (Atrial Natriuretic Factor), which inhibit basal and angiotensin II stimulated steroid synthesis (2, 3, 4). Other factors such as macrophage secreted products (6, 7) and septic shock plasma factors (5) which have not been fully characterized also have suppressive activity on ACTH induced adrenocortical steroidogenesis *in vitro*. It is not yet clear whether there is any relationship between corticostatins and these macrophage products and shock plasma factor. Corticostatins do not inhibit dbcAMP induced steroidogenesis; however, they do inhibit the accumulation of cAMP in response to ACTH in rat adrenal cell suspensions. Binding studies show that CSI is a competitive inhibitor of ACTH binding, probably acting by blocking the address recognition site of the receptor (14–18 of ACTH). There is wide

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TABLE 1 The sequence of the corticostatins and their I.D.₅₀ for the inhibition of ACTH induced corticosterone production in rat adrenal cell suspension.^a

Peptide	Sequence	I.D. ₅₀ (ng/ml)
CS I	G-I-C-A-C-R-R-R-F-C-P-N-S-E- R-F-S-G-Y-C-R-V-N-G-A-R-Y-V- R-C-C-S-R-R	100
CS II	G-R-C-V-C-R-K-Q-2L-C-S-Y-R- E-R-R-I-G-D-C-K-I-R-G-V-R-F- P-F-C-C-P-R	500
CS III	V-V-C-A-C-R-R-A-L-C-L-P-R-P-E- R-R-A-G-F-C-R-I-R-G-R-I-H-P- L-C-C-R-R	1500
CS IV	V-V-C-A-C-R-R-A-L-C-L-P-L-E- R-R-A-G-F-C-R-I-R-G-R-I-H-P- L-C-C-R-R	2000
HP4	V-C-S-C-R-L-V-F-C-R-R-T-E-L- R-V-G-N-C-L-I-G-G-V-S-F-T-Y- C-C-T-R-V	1870
HP1	A-C-Y-C-R-I-P-A-C-I-A-G-E-R- R-Y-G-T-C-I-Y-Q-G-R-L-W-A-F- C-C	Not active

^aStandard one letter code abbreviations are used: A = alanine, C = cysteine, D = aspartate, E = glutamate, F = phenylalanine, G = glycine, H = histidine, I = isoleucine, K = lysine, L = leucine, M = methionine, N = asparagine, P = proline, Q = glutamine, R = arginine, S = serine, T = threonine, V = Valine, W = tryptophan, Y = tyrosine.

variation in the potency of the corticostatins ranging from an I.D.₅₀ of 100 ng/ml for CSI to a completely inactive analog, HP1. The nature of the biological activity is the subject of this report.

METHODS

All of the material and methods employed have been previously detailed elsewhere (11, 12).

RESULTS

The structures of the corticostatins isolated from rabbit fetal and adult lung and neutrophils are shown in Table 1. The dose response curves for these four peptides are shown in Figure 1. CSI was the most potent inhibitor of ACTH stimulated steroidogenesis. The minimum effective dose of CSI was 5 nM (20 ng/ml). The I.D.₅₀ of CSI, CSII, CSIII and CSIV are 100, 500, 1500 and 2000 ng/ml respectively. These are analogous to the peptides also isolated by Selsted, *et al.* (10).

Extracts of human neutrophils contain two peptides structurally related to the

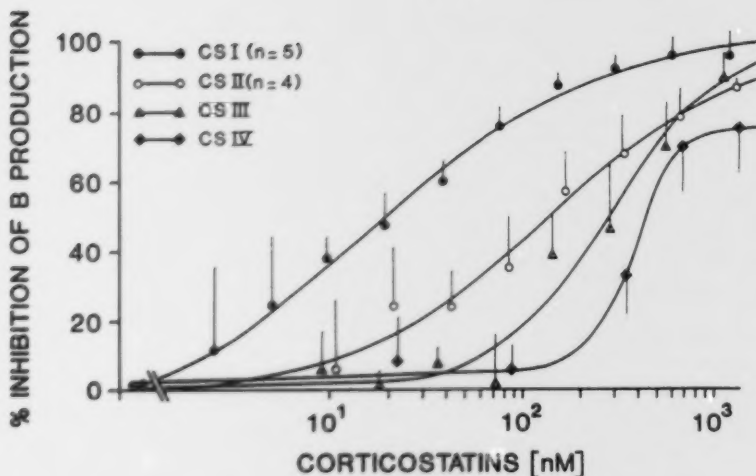


FIGURE 1 Dose response curves for the inhibition OF ACTH induced corticosterone production in rat adrenal cell suspension. 150 pg / ml of ACTH was used to stimulate 200,000 cells/ml in the presence of increasing concentrations of CSI, CSII, CSIII and CSIV. Corticosterone production was measured by RIA as described (11, 12). Values are the mean $\pm$ standard deviation of four separate experiments.

corticostatins. Of these the major component, HP1, was isolated and its structure established. A second minor component, HP4, is also structurally related to corticostatin. This was purified to homogeneity and sequenced. The structures of these two peptides are shown in Table I. Figure 2 shows that HP1 has no corticostatic activity, whereas HP4 inhibits ACTH stimulated steroidogenesis, with an I.D.₅₀ of approximately 1870 ng / ml.

The Mechanism of Action of Corticostatin

To elucidate the mechanism of corticostatin inhibition we tested the effect of increasing concentrations of dbcAMP on corticosterone production in dispersed rat adrenal cortical cells in the presence and absence of corticostatin and found that the effective dose range of dbcAMP was from 2 to 64 μ g / l, and maximum corticosterone production was the same as that obtained using ACTH (300 ng / 2×10^5 cells / 2 hrs). There was no significant difference between the action of dbcAMP in the absence or presence of CSI, even at concentrations of CSI of 1 μ / ml, which completely abolishes the steroidogenic response to ACTH under the conditions of the assay. In contrast, CSI dramatically reduces the production of cAMP by adrenal cell suspensions in response to ACTH. We can infer from this that corticostatin acts before the production of cAMP in the response of adrenal cells to ACTH. Other experiments using cholera toxin and forskolin excluded the possibility that corticostatin acts on adenylate cyclase.

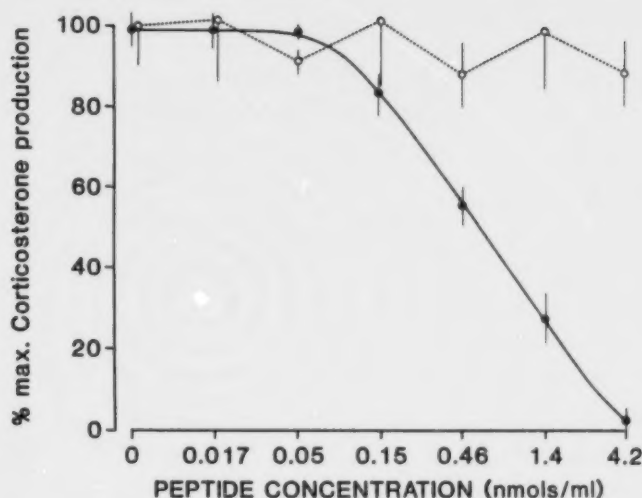


FIGURE 2 The effect of HPI and HP4 on the ACTH induced release of corticosterone in the rat adrenal cell suspensions. 150 pg / ml of ACTH was used to stimulate 200,000 cells / ml in the presence of increasing concentrations of HPI (closed circles) and HP4 (open circles). Corticosterone production was measured by RIA (2). Values are the mean $\pm$ standard deviation of four separate experiments.

Direct evidence that CSI is a competitive inhibitor of ACTH was obtained through ACTH receptor binding studies using ^{125}I (Phe², Nle⁴) ACTH₁₋₃₈, a fully active analog (1). It was found that CSI was able to displace 175 pM of ^{125}I (Phe², Nle⁴) ACTH₁₋₃₈ in the range of 10 nM to 250 nM, and is about 12 times less potent than ACTH₁₋₃₉ and 1.7 times more potent than ACTH₆₋₂₄. The relative binding of CSI and ACTH₆₋₂₄ corresponds well with their relative potency in the inhibition of corticosterone production. CSI is therefore a more potent competitive inhibitor of ACTH binding than ACTH₆₋₂₄.

Further evidence of the nature of CS binding to the ACTH receptor was obtained by comparing the inhibition of steroidogenesis by CSI in response to N-terminal fragments of ACTH. αMSH (N-acetyl-ACTH₁₋₁₃ amide), stimulates adrenal cortex steroidogenesis at concentrations greater than 10^{-7} M, and is not inhibited by 1 μg / ml CSI. ACTH₁₋₁₈ amide, however, which is effective at 10^{-12} M, is inhibited by 1 μg / ml CSI, the ED_{50} for steroidogenesis shifting from about 2×10^{-11} to 1×10^{-10} M. Thus it is likely that CSI acts by preventing the address region of ACTH from interacting with the receptor, i.e., residues 15 to 18 present in ACTH₁₋₁₈ amide but not αMSH .

The structures of all the corticostatins are very similar, so it is remarkable that their relative inhibitory potencies vary so widely. Interestingly, an antibody raised against CSI shows very little cross reactivity against CSII, CSIII, or

CSIV. Therefore, relatively small changes in the primary structures of these peptides confer great differences in their binding properties in at least two systems, the ACTH receptor and the immunoglobulin.

To identify key differences in their structure that may account for their varying bioactivities, Table I compares the structures of the corticostatins and gives their relative potencies as ACTH inhibitors. HP1 has no corticostatic activity, and differs from the other corticostatins in not having the C-terminal arginine at position 33 (Table I). The other corticostatins possess this residue, and are inhibitory. However, the differences in their potencies indicate that other residues distal to the C-terminus affect the activity. A common feature is the arginine in position 25 or 26; however, this is absent in HP4, and cannot, therefore, be essential. CSI, which is by far the most potent inhibitor, has an arginine at position 29 that is absent from the others. A further interesting feature of CSI, which may be involved in its high potency, is the stretch of three adjacent arginine residues at positions 6 to 8, resembling the address sequence of ACTH.

DISCUSSION

The corticostatins are a family of closely related peptides of between 30 to 34 residues, with a highly conserved cysteine rich backbone. They were previously reported as endogenous antibiotics in neutrophils and alveolar macrophages (8). We have recently shown that they have other biological activities *in vitro*, particularly the specific inhibition of ACTH induced adrenocortical steroidogenesis (11). Despite their close conservation of structure, they show considerable diversity in their inhibitory potency. We have attempted to define their mode of action and correlate their structure to activity.

Although the primary role of cAMP in ACTH is still controversial, the ACTH-cAMP model remains the most satisfactory and it has received powerful support from genetic studies of adenylate cyclase and protein kinase mutants of adrenal cells (8). To investigate the effect of CSI on the response of adrenal cells to cAMP, the cells were incubated with dbcAMP in the presence or absence of CSI. Corticostatin has no inhibitory effect on the steroidogenic activity of dbcAMP, and must therefore act on or prior to adenylate cyclase. Other experiments using forskolin and cholera toxin excluded the possibility that CSI acts at either Gs or adenylate cyclase. Although CSI does not affect adenylate cyclase it does reduce the production of cAMP in response to ACTH. Taken together these data suggest an effect of CSI on the ACTH receptor.

Binding studies using a fully active ACTH analog, $^{125}\text{I}(\text{Phe}^2, \text{Nle}^4)\text{ACTH}_{1-38}$, show that CSI displaces ACTH from its receptor. Inhibition of binding by CSI was approximately 12 times less potent than that of human ACTH $_{1-39}$. It was however, 1.7 times more potent than the well-known competitive inhibitor ACTH $_{6-24}$. Thus the CSI appears to be a potent competitive inhibitor of ACTH *in vitro*. Structure-activity studies on ACTH have

shown that two regions of the molecule are crucial for activity (9), the N-terminal residues 4–10 contain the message sequences required for a steroidogenic response, and the residues 15 to 18 form an address region involved in receptor recognition. The message sequence is present in both α MSH and ACTH_{1-18} amide, whereas ACTH_{1-18} amide but not α MSH contains the address sequences. CSI inhibits ACTH_{1-18} amide induced steroidogenesis but not that of α MSH, strongly suggesting that CSI acts by blocking the part of the receptor that binds to the ACTH address region. By comparing the structure-activity relationship of the corticostatins it appears that an arginine residue C-terminal to the final cysteine is crucial since this is missing in the inactive analog HPI. The arginine residue at position 25 or 26 also appears to play an important but not essential role. In CSI, the crucial C-terminal arginine residue is likely to be close to the tri-basic sequence of residues 6 to 8 found only in CSI, and this feature may account for the extremely high potency of CSI compared to the other analogs. From immunological studies we have obtained further evidence that CSI differs from the less potent corticostatins since a polyclonal antibody raised against CSI cross reacts very weakly with CSII, CSIII and CSIV. Similarly an antibody against the inactive analog HPI has no cross reactivity with any of the other corticostatins. In addition the anti-CSI serum does not react with the following peptides: α MSH, ACTH_{1-39} , Angiotensin II, CRF, LHRH or Calcitonin.

In conclusion, the corticostatins are a family of competitive inhibitors of ACTH, which probably act by blocking the address recognition site of the receptor. The physiological role of the anti-ACTH activity of these peptides is only now being unravelled; however, since glucocorticoids are immunosuppressive and large quantities of corticostatins are present in neutrophils, they probably play a role in regulating immuno-endocrine interactions.

Other members of this cysteine-rich, arginine-rich family of peptides are cytotoxic (13) to human lung tumor cells. These peptides are found in the PMN leukocytes in human tumor cells (13) and in the cDNA overexpressed in human leukemic cells (14). This aspect of our investigations, which is of great practical interest, is now being pursued.

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**Biographical Sketches of
Deceased Fellows
Notices nécrologiques des
membres décédés**



JACQUES PALLASCIO

Leonard Francis Bélanger
1911–1986





DANS LE CONTEXTE de la médecine, dont la pratique et la formation professionnelle au Canada remontent à l'époque de la Nouvelle-France, il est plutôt rare de nos jours de pouvoir faire l'éloge d'un praticien contemporain des arts médicaux reconnu comme un pionnier véritable, prêt à relever tout défi en préférant le risque à la certitude. Or dans le cas de Leonard F. Bélanger, qui est décédé en juillet 1986 à l'âge de 75 ans, force nous est d'admettre que l'exception fait la règle. Chercheur chevronné et lauréat de plusieurs prix éminents, le Dr. Bélanger se distingue de la masse parce qu'en 1946 il accepta de devenir l'un des fondateurs de l'École de médecine de l'Université d'Ottawa. Médecin-chercheur spécialisé dans le domaine de l'histologie, sous-spécialisation de l'anatomie, le Dr Bélanger, au cours d'une carrière de 40 quelques années, dont cinq sous les drapeaux lors de la Deuxième Guerre mondiale, s'est acquis une renommée enviée par son dévouement entier à sa profession de médecin et à sa vocation d'enseignant-chercheur. Né à Montréal en mars 1911, il obtint en 1937 un grade en médecine de l'Université de Montréal où il avait complété, entre autres, des études menant au baccalauréat. Désireux de parfaire ses connaissances, il obtint en 1940 une maîtrise en sciences médicales de la Harvard Medical School où il travailla avec George Wislocki sur la structure des poumons de mammifères aquatiques. Revenu à Montréal, il travailla six mois au laboratoire du Dr Hans Selye pour y faire de la recherche endocrinologique. Médecin rattaché à l'aviation canadienne durant la Deuxième Guerre mondiale, il préféra, à la cessation des hostilités, le milieu universitaire à la pratique médicale. Lorsqu'il accepta en 1946 d'assumer la direction du nouveau Département d'histologie et d'embryologie de la Faculté de médecine naissante de l'Université d'Ottawa, Leonard Bélanger venait d'accepter de relever un défi qui se révélerait la plus grande aventure de sa vie. En vérité, la Faculté de médecine de l'Université d'Ottawa à ce moment de son histoire n'existait que dans les rêves et les espoirs de quelques médecins et universitaires. Ce groupe de personnes courageuses était convaincu du besoin qu'il y avait d'établir une école dans la capitale où des étudiants francophones et anglophones pourraient y obtenir ensemble la formation menant au grade de docteur en médecine. En acceptant un poste à l'Université d'Ottawa, il s'associait à un établissement d'enseignement et de recherche qui allait non seulement le loger dans une ancienne caserne militaire, mais ne pouvait pas non plus lui offrir ni l'appareillage nécessaire à son fonctionnement, ni les budgets requis pour remplir son mandat. Séduit par le défi, Leonard Bélanger s'est joint tout de go à l'équipe des rêveurs. Avec l'aide précieuse de son épouse Cécile, qui lui a fourni l'apport technique nécessaire à sa recherche tout au long de sa carrière, il a fondé le Département d'histologie et d'embryologie. Il en demeura le directeur jusqu'à sa retraite en 1976. Malgré un manque chronique de ressources, l'enseignement du Dr Bélanger, tant dans la salle de cours ou au laboratoire, n'a jamais été rien moins qu'excellent. Citons, à titre d'exemple, sa collaboration avec Charles Leblond, professeur et chercheur à l'Université McGill, qui a mené à la découverte d'une méthodologie

d'autoradiographie à l'aide d'émulsions liquides. Selon les spécialistes, cette trouvaille figure parmi les plus importants outils morphologiques mis au point au cours des quatre dernières décennies. Après quelques années seulement, son oeuvre de chercheur a pris le même essor que la nouvelle faculté et a donné lieu à d'importantes contributions. De sa collaboration avec M. Crevier est ressortie une technique devenue très connue d'histophotométrie et, avec son épouse Cécile, une nouvelle méthode d'alpharadiographie. Les travaux du Dr Bélanger de concert avec des chercheurs de renom ont produit un bilan de près de 200 communications spécialisées. Bien sûr, ses réalisations lui ont acquis la reconnaissance de ses pairs: il a été nommé membre de l'ACFAS, de la Royal Microscopical Society et de la Société royale du Canada. Il s'est vu décerner la médaille Parizeau de l'ACFAS, le Steindler Award of the American Academy of Orthopaedic Surgery, le Tokyo Medical Society Award et, un an avant sont décès, le Prix Grant décerné par l'Association canadienne d'anatomistes. Invité à plusieurs reprises à enseigner dans des universités du Canada et des États-Unis, le Dr Bélanger était membre d'un grand nombre d'associations et d'organismes professionnels ainsi que rédacteur ou expert-conseil auprès de plusieurs publications savantes.

JON GERRARD

Bruce Chown
1893–1986





THE MEDICAL COMMUNITY of Canada is blessed to have had within its midst a man of the quality of Dr. Bruce Chown. It is rare for an individual to have a major impact on a common disease process, but such was the case with Dr. Chown. From 1944 to 1975, he focused much of his energies on understanding and treating the hemolytic disease of the newborn, *erythroblastosis fetalis*, commonly known as Rh disease, a condition which accounted for 10 percent of the forty perinatal deaths per 1,000 births that occurred each year in the 1940s. Dr. Chown's involvement with Rh disease really began in 1942 when he visited Boston and received some antisera to the Rh factor. On his return to Winnipeg, he hired Marion Lewis, started the Winnipeg Rh Laboratory and, together with Marion, quickly developed a novel capillary procedure for detecting red cell antigens. In the late 1940s, exchange transfusion was introduced to treat Rh disease. Later, Dr. Chown said: "The greatest moment of satisfaction in my career was when the first exchange transfusion was performed . . . For three years we had been watching babies die . . . and now we could get them to live."

Dr. Chown, Marion Lewis, and the Drs. Bowman were soon travelling frequently throughout southern Manitoba to provide emergency exchange transfusions to affected infants. Though Dr. Chown might arrive back very tired, he would be very enthusiastic about what had been accomplished. In 1954, he made a critical observation on a newborn with unexplained anemia and showed that the anemia was due to the infant bleeding into the mother. The mother had a significant proportion of the infant's red cells in her circulation. This observation confirmed the hypothesis put forward by Dr. Weiner, which proposed that Rh disease resulted from the bleeding of the infant into the mother and the formation of antibodies in the mother. From this pivotal observation arose the concept that if one could, at a critical juncture, provide the mother with antibodies that would destroy the infant's red cells, then she would not become sensitized. This proposition was tested in a clinical trial in Western Canada which culminated in the licensure of Rh immunoglobulin for clinical use in 1968. The result now is the prevention of the vast majority of potential cases of Rh disease, not only in Canada, but elsewhere around the world.

Bruce Chown, grandson of a partner in a Kingston foundry and son of Dr. Henry H. Chown, the third Dean of Medicine at the University of Manitoba, graduated in Arts from McGill University in 1914, served in World War I, receiving the Military Cross for his efforts. After the war, he returned to obtain an M.D. degree in Winnipeg, graduating in 1922. This was followed by three years of post-graduate training in Pediatrics and Pediatric Pathology in New York and Baltimore. In 1925, Dr. Chown returned to Winnipeg to practise Pediatrics and then to become Pathologist at the Children's Hospital. His research interests at this point were primarily concerned with calcium and phosphate metabolism, and he is usually credited with having described the first infant with hypophosphatasia. A superb diagnostician, he became known locally as the professor of "rareology" because of his ability to identify unusual conditions.

From 1949 to 1954, Dr. Chown was Chairman of the Department of Pediatrics in Winnipeg, the first geographic, full-time Professor of Pediatrics in Canada. But running a department and investigating Rh disease were not enough for this energetic man. During the summers, he and Marion Lewis toured distant parts of Northern and Western Canada to study Canadian Indian and Inuit groups. Their pioneering work has since received broad recognition for its importance in human anthropology.

In 1954, Dr. Chown retired as Head of the Department of Pediatrics to devote more time to his research. Under his guidance, Winnipeg became, in 1961, one of the first centres in North America to use amniotic fluid spectrophotometry and, in 1964, one of the first to use intrauterine fetal intraperitoneal transfusions. Dr. Chown continued to be active as a scientist and a teacher, in particular working with Marion Lewis and Hiroko Kaita; their work was widely accepted for its meticulous and careful nature. By the time he retired in 1975, Dr. Chown was author or coauthor of 148 publications, the vast majority of which were written after he had passed fifty years of age.

For his many contributions, Dr. Chown received wide-spread recognition, including honorary degrees from five universities, appointment as an Officer of the Order of Canada in 1967, the Gairdner Foundation of America Award in 1968, the Starr Medal of the Canadian Medical Association in 1969, the Karl Landsteiner Award of the America Association of Blood Banks in 1971, and the Ross Award of the Canadian Pediatric Society in 1979.

ALLAN G. GORNALL, F.R.S.C.

James Arnold Dauphinee
1903–1983



TRANSACTIONS OF THE ROYAL SOCIETY OF CANADA / SERIES V / VOLUME IV / 1989



JAMES A. DAUPHINEE was one of the pioneer medical scientists of Canada. He was born in New Westminster, B.C. in 1903, the only son of Lindsay Arnold and Isabella St. Clair Paul (Muirhead). A graduate of the Duke of Connaught High School, he entered the University of British Columbia where, in 1922, he earned a B.A. with first class honours in Chemistry and Biology. A year of research led to his first paper, "The Physiological Value of British Columbia Foxgloves," and an M.A. in Chemistry from U.B.C.

In 1923 a Fellowship brought him to the University of Toronto as a graduate student of Andrew Hunter, Professor of Biochemistry. He was awarded an M.A. in 1924 for studies on the distribution of arginase in fishes and other animals, work done in the summers at the Pacific Biological Station, Nanaimo, B.C., and during term in Toronto. The next three years were spent in research on the use of arginase for the determination of arginine and its application to the analysis of proteins. James Dauphinee had a capacity for work that bordered on the compulsive. In 1927 he elected to enter Medicine while still completing research for the Ph.D., which he received in 1929. A year later he graduated M.D., silver medallist and winner of the Chappell Prize.

In 1929 he married Doris Anita, daughter of the Rev. Dr. and Mrs. C.E. Manning, who had been secretary in the Department of Biochemistry. Their daughter Catherine was born in 1936.

The young Dr. Dauphinee, as Ellen Mickle Fellow for 1930-31, proceeded to London, England, where he was Clinical Assistant in the Dunn Laboratory of St. Bartholomew's Hospital. Here he studied and published a report on calcium and phosphorus in *osteitis fibrosa*. The next two years were spent as Junior and Senior Intern at Toronto General Hospital, followed by a year as Fellow in Medicine and an appointment as Junior Demonstrator in the Department of Medicine from 1934-41. He attained his FRCP(C) in 1936 and enjoyed both a hospital and private practice from 1938-41.

In April 1941 Dr. Dauphinee enlisted with the rank of Captain in No. 7 Light Field Ambulance, Royal Canadian Army Medical Corps, and went overseas later the same year. In England he was medical specialist at No. 8 Canadian General Hospital. Promoted Major in 1942 and Lt. Colonel in 1943, he was O/C Medicine at No. 11 Canadian General Hospital in England and at No. 8 Canadian General Hospital in England and N.W. Europe. During this period he was particularly interested in infectious diseases and the potential of newly developed antibiotics. During a diphtheria outbreak at his hospital in Belgium he visited patients several times a day. Credited with having contained this epidemic he received the Order of the British Empire in 1946.

Dr. Dauphinee returned to Toronto in 1945 as Associate in Medicine and Attending Physician at Toronto General Hospital. He was also consultant in Medicine, Department of Veterans Affairs, and assumed responsibility for the Clinical Chemistry Laboratories at Christie St. Veterans' Hospital.

In 1947 Dr. Dauphinee was offered the Chair in Pathological Chemistry at the University of Toronto, vacant after the retirement of Andrew Hunter. His

heart was in medicine but his head was in science; this position suited him well and he filled it with distinction for the next nineteen years. He maintained clinical contacts as an Associate in Medicine.

As a teacher Dr. Dauphinee was not a showman but his lectures were well organized and carefully prepared. He understood the place of science in the education of a physician. He was author of a number of reviews that reflect the range of his interests: iron nutrition; the use of antibiotics; radioactive isotopes; biochemical tests in clinical medicine; fluid electrolyte and hydrogen ion regulation and therapy. With Dr. W. Paul he developed in 1957 the first postgraduate course on the clinical use of radioactive isotopes. In 1960 he was invited to tour Australia as a visiting lecturer.

Dr. Dauphinee's basic research interests ranged from enzymes, to serum proteins, to trace metals and the improvement and development of analytical methods. He had published about thirty research papers when he was elected a Fellow of the Royal Society of Canada in 1953. His graduate students included L.A.W. Feltham, B.A. Tobe, Margaret DeWolfe, and H. Kalant. Characteristically, they were encouraged to publish independently the results of their research.

From clinical and laboratory studies of patients with portal and biliary cirrhosis, Dr. Dauphinee came to see the importance of a more scientific approach to clinical research. In 1951, after visiting the renowned "Ward 4" at Massachusetts General Hospital, he was instrumental in establishing a Clinical Investigation Unit at Sunnybrook Hospital with its own dietary control and specialized laboratory service. Probably the first of its kind in Canada, it continued under his supervision for fifteen years as a model for developments elsewhere. Collaborative studies on metabolic and endocrine disorders and on rheumatoid arthritis emanated from this Unit. Dr. Dauphinee had a special interest in trace metal metabolism, centred on copper and ceruloplasmin in Wilson's disease and the effects of treatment with penicillamine. He was a member of both the Canadian and American Societies for Clinical Investigation.

Generous in his support of medicine, Dr. Dauphinee served as Chairman of the Defence Research Board Panel on "Radiation Protection and Treatment" (1951-53) and of the advisory committee on "Clinical Uses of Radioactive Isotopes" of the Department of National Health and Welfare (1952-56). He was a member of Council of the College of Physicians and Surgeons of Ontario from 1947-60 (President, 1954-55) and was the University's representative on the Medical Council of Canada, 1947-60 (President 1957-58).

Dr. Dauphinee's contributions to his own specialty of clinical biochemistry included many innovations. He was responsible in 1948 (with Dr. W. Paul) for the establishment of an Isotope Laboratory at the Banting Institute to control the clinical use of radionuclides, and in 1950 (with Dr. A.G. Gornall) the first Steroid Assay Laboratory in Toronto. He set up the first electrolyte assays at Toronto General Hospital and later the first flame photometric analyses of

sodium and potassium. He introduced salt precipitation methods for fractionating serum proteins, followed later by paper electrophoresis, and the first enzyme assays. Dr. Dauphinee was supervisor of the Clinical Chemistry Laboratories at both Toronto General and Sunnybrook Hospitals until he arranged the appointment of their first full-time directors.

In service to the community James Dauphinee was a Trustee of the Banting Research Foundation (1954-75), a member of Council of the Royal Canadian Institute (1960-69) and President 1965-66. He was President of the Toronto Diabetes Association 1961-62. For many years he was an active member of Grace Church on the Hill.

Dr. Dauphinee's wife Doris died suddenly and unexpectedly in 1953. His daughter married in 1958 and gave him two grandsons. In 1960 he married Muriel Manning, a gracious lady and talented hostess. Vacations at a summer home on Lake Joseph were a special pleasure, but dedication to duty left little time for his other interests in the violin, photography or stamp collecting. He played squash as a student, in later years only an occasional game of golf. He was a member of the Sydenham and York Clubs and the Rosedale Golf Club.

James Dauphinee resigned the Chair in Pathological Chemistry in 1966, and retired as Professor Emeritus in 1968 but retained a part-time appointment until 1970. It is a sad postlude that in his mid-seventies he made his own diagnosis of Alzheimer's disease. He bore his declining mental and physical powers with remarkable fortitude and died after a year in Sunnybrook Veterans' wing in August 1983.

Dr. Dauphinee will be remembered for his breadth of knowledge, his devotion to scholarship, and his remarkable foresight. His true greatness lay in his personal integrity and in his unfailing concern, not only for his patients but for all those under his authority. He was a willing and wise counsellor; those who experienced his warm smile, quiet sense of humour, and loyal friendship were fortunate indeed. His friends will remember him with a quiet joy.



ALBERT FAUCHER, S.R.C.

Jean-Charles Falardeau

1914–1989





JEAN-CHARLES FALARDEAU, docteur en sociologie, professeur émérite de la Faculté des sciences sociales de l'Université Laval, est décédé le 24 avril 1989, à la suite d'une longue maladie. Universitaire de haute classe, promoteur de la sociologie dans l'institution à laquelle il a consacré le meilleur de son talent et de son énergie, il laisse un souvenir vivace dans la mémoire de ses collègues, de ses anciens étudiants, et de ses nombreux amis.

Il est né à Québec, où il fréquenta l'école paroissiale ; il fit ses études secondaires et collégiales à Montréal, aux collèges Sainte-Marie (1927-28) et Brébeuf (1928-33), études qu'il termina à Québec en 1935 par un baccalauréat ès arts de l'Université Laval. Puis, à la même université, il poursuivit ses études, en droit, en philosophie, en sciences sociales, et il obtint une licence en philosophie et une licence en sciences sociales en 1941. C'est là qu'il découvrit sa vocation de sociologue, c'est de l'Université Laval qu'il partit pour se spécialiser en sociologie à l'Université de Chicago, à titre de boursier de la Société royale du Canada, 1941-43.

A son retour de Chicago, à l'automne de 1943, il était chargé de cours à la Faculté des sciences sociales de Laval ; en 1946, il était nommé professeur agrégé et, en 1949, professeur titulaire. Cette rapide ascension dans l'échelle des responsabilités atteste le rôle qu'il a dû jouer et l'influence qu'il a exercée dans cette institution. Dès 1944, il mit en oeuvre le Centre de recherche de la Faculté ; il dirigea le Département de sociologie de 1953 à 1961 et, sous son directorat, naquit la revue *Recherches Sociographiques*, publiée depuis 1960 par le Département de sociologie de l'Université Laval, une revue qui se sera signalée comme medium de communication inter-universitaire et, notamment, comme outil de rapprochement entre universitaires de Québec et de Montréal.

Jean-Charles Falardeau s'est révélé bon collaborateur et habile communicateur. Dès le début de sa carrière, tout occupé qu'il était à organiser le département de sociologie, il n'a pas négligé pour autant d'établir des relations avec ce qu'on appelait dans ce temps-là le monde extérieur, i.e., non-francophone et non-catholique-romain ; et même, sur un plan nouveau, il s'est appliqué à renouer avec les « vieux pays » des liens que leurs « idées trop avancées » avaient rompus. Souvent on l'a entendu dire qu'il fallait percer des fenêtres dans les vieux murs pour y faire pénétrer de la lumière et pour y faire passer des courants d'air transnationaux. Et c'est en y travaillant lui-même sans relâche qu'il établissait sa renommée, discrètement, imperceptiblement, comme dit le poète : *velut arbor aevo crescit fama*, tel un arbre plongeant ses racines dans le sol natal et étendant ses ramures par delà son enclos. Il faut donc reconnaître le mérite du collègue Falardeau d'avoir été présent, et de façon éminemment efficace, à divers paliers de l'activité universitaire ou para-universitaire : au Conseil des recherches en sciences sociales depuis 1945 jusqu'en 1954 et à titre de président du bureau de direction en 1952-53, puis au Conseil des arts, à l'Association canadienne des sciences politiques groupant en ce temps-là économistes, sociologues, et politologues, dont il fut président en 1964-65, à l'Association canadienne-française pour l'avancement des sciences

(ACFAS), et à combien d'autres associations, francophones et anglophones. Il est allé à Nouvelle-Delhi comme délégué de la neuvième conférence générale de l'UNESCO ; il a siégé au Conseil des Arts du Québec à titre de président de cet organisme, de 1962 à 1965. Il était Officier de l'Ordre du Canada, Lauréat de Prix Léon-Gérin du Québec (1984), et Lauréat de la Médaille Innis-Gérin de la Société royale du Canada 1973.

Il convient de mentionner aussi son enseignement dans les universités canadiennes : professeur invité à l'Université de Toronto en 1949 et à l'Université de la Colombie Britannique en 1957 ; puis dans les universités françaises, à Bordeaux en 1949, à Aix-en-Provence à l'été de 1955, à l'Université de Caen en 1968-69, 1969-70, 1970-71, à l'Université de Paris-Nord en 1972-73.

A ces universités Jean-Charles Falardeau apportait l'explication de sa méthode de travail et le fruit de ses recherches. Il l'a fait, pour ainsi dire, en deux moments qui semblent correspondre à deux types d'orientation intellectuelle. Dans un premier moment, le sociologue définit la méthode sociologique, laquelle consiste, disait-il, à regarder et à voir la réalité telle qu'elle est, à interroger le passé dans une optique nouvelle, par rapport aux problèmes contemporains et en fonction d'un avenir à construire ; en quoi il se faisait l'écho de Léon Gérin qui, le premier, avait tenté d'introduire ici une méthode positive de travail dérivée de l'école de Le Play. Mais Léon Gérin n'avait jamais enseigné dans une université, car, en son temps, le peur du positivisme écartait des universités catholiques du Québec la sociologie d'inspiration européenne. Or, ce que Gérin n'avait pas accompli Falardeau allait le réaliser. Et sa méthode, constituée d'apports américains et européens à la fois, il l'applique à l'étude des réalités de son propre milieu. Très tôt, il a vu dans le Québec une société en mutation, une « révolution » qui mijotait : transformation rurale, urbanisation, migration des familles, changement dans les occupations, modification des cadres, paroissial et familial. Ce qu'il a apporté de radicalement nouveau dans un milieu aussi féru d'orthodoxie cléricale que le Québec, c'est le questionnement : dans son cheminement dialectique, il a posé des questions à ses concitoyens du milieu francophone ; et puis, graduellement, élargissant son champ d'observation, il a interrogé les citoyens de l'autre milieu. Ses recherches devaient porter alors sur les structures sociales et sur les relations de la société québécoise avec la société anglophone, en somme, sur la dualité culturelle de la totalité canadienne. Son analyse de la société québécoise, et la confrontation de cette société à l'autre, intéressaient vivement les universitaires anglophones, disons ceux qui commençaient ou continuaient de s'interroger sur leur propre identité. Ce type de questionnement nourrissait les cours et les séminaires qu'il donnait dans les universités anglophones du pays.

Quant à son enseignement en France on peut dire qu'il se situe plutôt au second moment du cheminement intellectuel du professeur Falardeau. Or, à ce moment, sa pensée s'orientait vers une problématique sociologique de la littérature et de la littérature québécoise, notamment. En somme, il cherchait le social dans les oeuvres de l'imaginaire ou, comme il le disait lui-même, il

cherchait dans la littérature le « miroir d'une société » ; et c'est bien le produit de cette fine quête du réel qui allait nous révéler le sociologue Falardeau à son meilleur, car on y trouve l'alliance de son génie d'observation et de sa finesse d'expression littéraire. Le scientifique et le littéraire y font bon ménage.

Jean-Charles Falardeau est l'auteur de plusieurs brochures et articles dans des revues canadiennes, américaines et européennes, traitant de la sociologie, des institutions sociales du Canada français, et de divers aspects culturels, sociaux, politiques, de la vie canadienne. Il a collaboré à divers journaux et revues littéraires (*Liberté*, *Le Devoir*, etc.) ; il a publié, en collaboration, les *Essais sur le Québec contemporain* (1953), il a été directeur-adjoint de la revue *Cité Libre*, responsable de la préparation du volume *La Dualité canadienne* pour le Conseil de recherches en sciences sociales (1960), co-éditeur du collectif *Littérature et Société canadienne-française* (1964) ; il est l'auteur de *Roots and Values in Canadian Lives* (1961), *L'Essor des sciences sociales au Canada français* (1964), *Notre société et son roman* (1967), *Imaginaire social et littérature* (1974), *Etienné Parent, 1802-1874* (1975). Enfin, cette incomplète énumération ne retient que l'essentiel de son oeuvre ; et encore faudrait-il mentionner ses écrits sur les institutions. Notons, incidemment, cette observation prophétique sur la société québécoise : « Jusqu'à quel point cette société sera en mesure de redéfinir son idéal de statisme, et d'adapter quelques-unes de ses institutions aux exigences du temps présent, dépendra de la clairvoyance avec laquelle, au cours des années à venir, ses groupes dirigeants prendront conscience des obligations qu'impose à la province de Québec sa position de carrefour culturel entre l'Europe, le Canada de langue française et les Etats-Unis » (*Esprit*, 1952).

Et notons aussi, à propos de l'institution universitaire, cette réflexion non moins prophétique : « l'université de notre âge est devenue ou risque de devenir une Babel bureaucratique et idéologique, sollicitée par les attentes d'une société industrielle, laquelle la conçoit comme une entreprise de production de techniciens » (*Carrefour*, 1952).

Bien sûr, ces quelques réflexions, et combien d'autres, seraient à reconsidérer et à replacer dans la trame de la durée, car si l'on veut bien comprendre le questionnement du professeur Falardeau, il faudra le chercher dans la totalité de son oeuvre. Et donc, pour honorer la mémoire de ce vaillant universitaire et celle de sa vaillante compagne, Guita, qui l'a si honorablement assisté, pour assurer la perennité de son oeuvre et pour en garantir l'utilité, souhaitons qu'on publie un jour une édition complète de ses écrits.



NEIL J. CAMPBELL

Henry Benedict Hachey
1901–1985





HENRY BENEDICT HACHEY, one of Canada's early pioneers in oceanography, died in St. Andrews, N.B., on 24 June, 1985, in his eighty-fourth year. He was born in West Bathurst, N.B., of Acadian descent with an ancestry that could be traced back four hundred years to the very early days of Lower Canada. He grew up in the Bathurst area and attended St. Thomas University in Chatham, N.B., and St. Francis Xavier University, Antigonish, N.S., where he obtained his B.Sc. He graduated in 1925 with a M.Sc. in physics from McGill University where he began teaching in the first of several remarkable careers, and continued as a Professor of Physics at the University of New Brunswick, Fredericton, N.B., from 1926 to 1928.

While at the Atlantic Biological Station in St. Andrews, N.B., as a summer investigator, he met and became a good friend of Dr. Henry Bigelow, who later was appointed Director of the Woods Hole Oceanographic Institution, Woods Hole, Massachusetts. At the time Dr. Bigelow was preparing a national report on a world-wide oceanographic research programme for the United States. The exciting and challenging nature of oceanography was sufficient to cause Harry to forsake his academic career for marine sciences. In 1928 he joined the Biological Board of Canada (later the Fisheries Research Board of Canada) as an oceanographer.

In 1929 he was named Scientist-in-Charge of the Hudson Bay Fisheries Expedition of 1930, charged to determine whether or not a deep-water fishery of commercial importance existed in Hudson Bay and to report his findings daily in code to Ottawa.

Accordingly, Dr. Hachey joined the coal-burning steam trawler *Loubyrne* in Halifax in the summer of 1930. Her oceanographic equipment consisted of two water bottles, two reversing thermometers, plankton nets, and hand winches. Fishing trawl hauls were made on a daily basis and not a single marine commercial fish was taken on any of the trawl hauls in the Bay. Despite the disappointing results and inadequacies of the equipment, the biological and oceanographic observations still remain virtually unchanged. In spite of its southern location the waters are arctic in character and too cold to sustain a marine fishery.

With the depression of the 1930s deepening and a fire that destroyed the Biological Station in St. Andrews, oceanographic research on the East Coast simply had to make do with what was left and available. Besides completing his scientific papers on Hudson Bay he wrote, researched and described the water conditions of the Scotian Shelf, Bay of Fundy, and Atlantic east coast north to Labrador and east to the Gulf Stream.

Throughout both his scientific and teaching careers Harry maintained a continuing interest in the army, having first joined the Non-Permanent Active Militia in 1921 at the age of 20. Shortly after World War II broke out he joined the North Shore New Brunswick Regiment in 1940 as a Captain. He served on active duty overseas for two years but was reassigned to chemical warfare research in Suffield, Alberta, and later was promoted to Lieutenant-Colonel

with the Army Operational Group. His intimate knowledge of East Coast waters, however, brought him back to the Maritimes on secondment by the army to the navy for special antisubmarine warfare duties.

With several naval officers he set up in St. Andrews an Atlantic Oceanographic Research Group (AORG) which worked directly with the first "Killer" Group (EG16) of the RCN, equipped with the most sophisticated submarine detection and weapons system of the day. His Group accessed the Station's oceanographic files and supplied vital information to the navy on the behaviour of sound ranging equipment in the highly stratified waters of the east coast. At the close of hostilities, he and the Group came into possession of classified German U-boat atlases and, to their surprise and Harry's dismay, he found his papers about the waters of the Scotian Shelf, the Gulf of St. Lawrence, the Bay of Fundy and others translated and illustrated for the use of enemy U-boats.

In recognition of his special wartime services he was made a Member of the Order of the British Empire, and on his discharge was awarded the Efficiency Decoration in recognition of meritorious service in the Canadian Army.

After the war, he returned to the Fisheries Research Board of Canada and headed the Atlantic Oceanographic Group. Being well aware during the war of the shortcomings of Canadian oceanography, Harry and his former wartime colleagues set about to create the means of sustaining oceanography in Canada for the future. The Joint Committee on Oceanography (JCO) was established in 1946 with membership of those government departments that had an interest or which could contribute to the development of oceanography in Canada. Harry, a tireless advocate for marine sciences in Canada, dedicated himself to uniting and coordinating the work of various government departments for the cause. It is to his credit and recognition as the founding Secretary of the JCO, and later its expanded successor the Canadian Committee on Oceanography, that it continued to function until the 1980s. Through his personal initiative, direct interventions, briefs, and reports he forged a government and university partnership that led to a national focus and international acknowledgments throughout the world of Canadian marine science.

He was the foremost expert on East Coast waters for almost thirty years and was responsible for initiating and developing oceanographic studies in these waters for fisheries and defence interests. He served as the Chief Oceanographer of the Fisheries Research Board from 1946 until his retirement in 1964 and afterwards as a consultant. In 1950 he was awarded an Honorary Doctor of Law from St. Thomas University and another from St. Francis Xavier University in 1969. In that year, he also was elected a Fellow of the Royal Society of Canada.

Dr. Hachey was active in southwest New Brunswick community affairs. He served thirteen terms as Mayor of St. Andrews and ten terms on the Charlotte County Council. He was President of the Charlotte County Liberal Association and contested the riding, albeit unsuccessfully, as a federal Liberal candidate in 1968. He served as an active member and director on two hospitals' boards, was

Chairman of the Board of the Ross Memorial Museum, and President of the Passamoquoddy Branch of the Royal Canadian Legion.

To his wife, Katherine Avis Cox, and family Osmund, John, Mary-Isabel, and Jane he was a beloved husband, father, counsellor, and philosopher. Many have shared some part of his life and, whether as a scientist, teacher, soldier, sportsman, or friend, all will remember him with fondness and respect. He was a man of principle and integrity, and a gifted writer who, besides authoring and co-authoring some one hundred scientific papers, documented in a most touching way some of his personal experiences and feelings in prose and poetry.



J. M. HARRISON, F.R.S.C.

Alfred Walton Jolliffe
1907–1988



TRANSACTIONS OF THE ROYAL SOCIETY OF CANADA / SERIES V / VOLUME IV / 1989



ALFRED WALTON JOLLIFFE, Professor Emeritus of Queen's University, died in his home in Kingston on 5 August, 1988. Fred—he insisted on being called by his nick-name and he called everyone else by his or her given name—had an extraordinary talent. A kindly giant of a man, he was an excellent field geologist and a superb teacher, and he loved people.

Fred was born on 8 May, 1907, in Winnipeg where he took his early schooling. In 1920, the family moved to Kingston when his father, R.O. Jolliffe, became Head of Queen's University's Department of Latin. Fred naturally went to Queen's where he graduated with a B.A. and the medal in chemistry in 1929. Like so many geologists who have left their mark on the complex of sciences that make up geology, he graduated first in chemistry; he then switched to mineralogy, taking his M.A. in 1931. He completed a Ph.D. in geology in 1935 at Princeton University.

From 1928 to 1945, Fred worked for the Geological Survey of Canada, first as a student assistant and then, from 1935, as an Officer of that august institution. His success at the Survey was based not only on his geological acumen but on the number of students who worked for him and later became distinguished geologists in their own right. His enthusiasm for teaching showed early.

It was one of his sub-parties that discovered gold on the west bay of Great Bear Lake in 1935. The discovery was made late in the field season and Fred did not know about it until he contacted the sub-party chief at Fort Smith on the way out, where practically all the geological prospectors were gathered waiting for airplanes to go south. He decided the best thing to do was to announce it on the spot. When the planes came in all the explorers headed north instead of south and most of the staking was done under a cover of snow. The city of Yellowknife was founded near the site of the discovery, and Fred's contributions are commemorated by Jolliffe Island in the bay where the discovery was made.

When Fred was mapping the Yellowknife area, no aerial photographs were available, but he did not allow such a little problem to stand in his way. He lay on the floor of a Norseman floatplane with his feet tied to a stanchion and hung out the door of the aircraft far enough to take pictures with his own camera.

During World War II, he studied uranium geology and was involved in the search for rare-element minerals and tungsten with considerable success. In his re-study of Great Bear Lake, he discovered a vein that became the principal producer of uranium for several years thereafter.

In 1945, Fred began a five-year assignment as Associate Professor of Geological Sciences at McGill University. In those immediate post-war years, he taught a large number of strongly motivated veterans, many of whom went on to careers in Canada's growing mineral exploration and mining industry. In addition to teaching he began a productive career as a consultant on the Gunnar uranium mine, at the Steep Rock iron mine, and in the Northwest Territories, Saskatchewan, Ontario, Portugal, and Ireland.

In 1950, Fred moved to the Queen's University Department of Geological

Sciences as a full Professor. He firmly believed that the primary duty of a university professor was to teach. He also believed that senior professors should teach elementary geology to stir up interest in the students. He put his beliefs to the test at Queen's where he taught elementary geology to the full class of first-year engineers with up to 380 students in each class. He developed a wide ranging course for arts students called "Geology, Time and Man." He also taught upper-year and graduate courses in economic geology and geochemistry, and supervised some thirty graduate and sixty undergraduate theses. He estimated that in his twenty-two years at Queen's some 6300 students had sat in his classes. Towards the end of his career as a teacher, Fred was one of twenty-two university professors selected by students as outstanding teachers to write a chapter in a book entitled *Teaching in the Universities . . . No One Way*. As one might expect he had little time to do research or write papers during his teaching career.

He published about thirty scientific papers and articles, which constitute the formal record of some of his research. His consulting activities resulted in many times that number of technical reports. Not only was he a good teacher but he had the knack of using his great skills as a raconteur to communicate his ideas to scientific meetings, to prospectors, in lectures, and as an excellent after-dinner speaker. He was an active participant in professional affairs, being a Fellow of the Geological Association of Canada, the Geological Society of America, the Mineralogical Association of Canada, the Society of Economic Geologists, and the Society of Sigma Xi. He was also a member of the Canadian Institute of Mining and Metallurgy and the Prospectors and Developers Association, as well as the History of Sciences Society and the Society for the History of Technology, among others. He received the Barlow medal in 1939 for the best geological paper of the year published by the CIM. However he was not a committee man, partly, I suspect, because he felt that the amount of good that came from committees was not commensurate with the time and effort put into them. I once asked him if he would be a member of some committee or other and he responded that he would be glad to, but that I should know that he always took care to perform so badly on committees that he would never be asked to repeat.

After he retired from Queen's in 1972, he continued to be active in geology but from a different perspective. With his brother, H.R. Jolliffe, a Latin scholar, he began to prepare the first direct English translation of Georgius Agricola's, *Bermannus, Sive de Re Metallica* (Bermannus, *A Dialogue on Mines and Minerals*, 1530), a work that marks the birth of the sciences of mineralogy, mining and geology. This project is essentially complete and it is hoped that it can be published as the final milestone of an outstanding career.

Fred married Catherine Peabody in 1937; they had two sons, Peter A. and Thomas S., and two daughters, Leslie Ann Miller and Mary Catherine Neasmith.

Fred Jolliffe was a fine geologist, a remarkable teacher, and a great human being; he is remembered by all associates with affection and respect.

MORRIS KATES, F.R.S.C.

Jacob Gordin Kaplan
1922–1988



TRANSACTIONS OF THE ROYAL SOCIETY OF CANADA / SERIES V / VOLUME IV / 1989



JACOB GORDIN KAPLAN, who was prominent in biological science in Canada and abroad for many years, passed away at the age of sixty-five in Edmonton on 6 July, 1988, a victim of cancer.

Gordin was born in New York city on 26 November, 1922 and received all his education there, as well as his "formation" as a scholar, scientist, humanist, and music lover. His love of both science and music developed early in the intellectual atmosphere at home fostered by his parents. Violin lessons at an early age led to an interest in chamber music and quartet playing that was to become his passionate avocation. Humanism came to him naturally from his family background.

His undergraduate years at the City College of the City University of New York opened the door to a world of stimulating intellectual activity and intense competition which formed the basis of his scientific career. After receiving his B.A. with a major in biology in 1943, Gordin joined the U.S. Army Medical Department and served in the European Theatre for two years as a surgical technician with the rank of corporal. Returning to New York in 1946, he continued his training in science, at the graduate level, at Columbia University, obtaining his M.A. in 1948 and his PH.D. in 1950 in the area of bacterial genetics.

At this point in his career, Gordin made a decision that was to have a significant effect on the development of biological science in Canada. He decided to take up an appointment at Dalhousie University, Halifax, as Assistant Professor in the Department of Physiology and Biophysics. Why he did so, rather than seeking a position in a U.S. university, is not clear. Perhaps he was attracted by the challenge of an academic career in a developing department in a country with a large potential for expansion of its academic institutions. At any rate, his decision to settle in a Canadian university was a firm and lasting one and he remained in this country to the end. His academic and research career, which spanned a period of forty years, was spent at three universities: Dalhousie (1950-1966), Ottawa (Department of Biology, 1966-1981) and Alberta (Department of Biochemistry, 1981-1988).

Considering Gordin's stature as a cell biologist during the last twenty-five years of his scientific career, it is surprising that his first research publications during his Dalhousie period were not on cell biology but on physical biochemistry, in particular, on the surface properties of the enzyme catalase and the effects of UV radiation on proteins. However, the early part of this period may be considered as a latency phase during which his interest and proficiency in cell biology and molecular genetics developed and matured through sabbatical leaves spent in the laboratories of M.R. Pollock (London, 1956-57), J. Monod (Paris, 1957), and P.P. Slonimsky (Gif-sur-Yvette, 1964-65), and later G. Cohen (Paris, 1973-74), and J. Dausset (Paris, 1974).

Thereafter, and continuing into his Ottawa period, his research became increasingly concerned with the regulation of the enzyme aspartate carbamylase, and the cell biology of the immune system and the immune response,

involving largely his studies on the mechanisms of lymphocyte activation and proliferation. The latter topics were to occupy most of his research activity in his Alberta period, during which they were developed to their highest point of maturity.

From the beginning of his academic career, Gordin was deeply concerned about the role of science and the scientist in social and environmental problems, and was publishing articles in *Science* on radioactive fallout (1959, 1960) and participating in symposia on Science and Society (1960), Man and Society (1961), and later The Role of the Scientist in Society (1971). Later still Gordin lectured at conferences on Science and Religion (1983), Canada, the World and the Future (1983, 1984, 1985), War and Peace (1983), Effects of Technological Changes on Man and Society (1984), and many others.

During his Ottawa period, in addition to his productive research program, Gordin was most active in academic and scientific organizations. Apart from serving two terms as chairman of the Biology Department (1975–1981), he served as co-editor of the *Canadian Journal of Biochemistry* (1973–81); President of the Association of Professors of the University of Ottawa (1968–69); President of CAUT (1970–71); President, Canadian Society of Cell Biology (1971–72); President, Canadian Federation of Biological Societies (1975–76); President, Canadian Biochemical Society (1978–79), etc. Gordin was also an eloquent spokesman for and populizer of science through his organizing of the first science lobby of the House of Commons in 1976, his weekly appearances on CBC's *As it Happens*, as host for the CBC-TV program *Crossfire*, and as a science reporter for CTV.

In 1981, after such a strenuous academic and research career at the University of Ottawa, Gordin Kaplan decided to move on to the Vice-Presidency (Research) at the University of Alberta. This position, which had just been created to coordinate and promote research within the University of Alberta with government and industrial support, seems to have been made to order for Gordin Kaplan.

Within a few years of taking up this position, Gordin had established the Office of Research Services, founded WISEST (Women in Scholarship, Engineering, Science and Technology), inaugurated the University of Alberta's prestigious Research Prize Awards, founded UNDO (University Nuclear Disarmament Organization) and the annual Conference on Canada, the World and the Future, and established ECAT (Edmonton Council for Advanced Technology). Gordin had said he "was brought to the University of Alberta to dream dreams and make them happen." Suffice it to say that by the end of his term as Vice-President (Research) many of his dreams had indeed become a reality, and that through his efforts a climate of intellectual, scientific, and artistic activity had been strongly fostered in the province of Alberta.

Gordin Kaplan stepped down from the Vice-Presidency early in 1987 and was appointed University Professor, which enabled him to devote himself more fully to his own research and lecturing. Over the years Gordin published more

than 120 research papers and lectured on his work in virtually every biology and biochemistry department in Canada and in many departments in the United States, France, England, and China.

Gordin Kaplan received many honours in recognition of his contributions to science and particularly to biology, the most outstanding of which are the Canadian Centennial Medal (1967), The Queen's Silver Jubilee Medal (1977), an honorary D.Sc. from Concordia University (1978), the University of Ottawa Alumni Staff Research Award and Lectureship (1979), and Fellowship in the Royal Society of Canada (1983). In April 1988, the University of Alberta and the Canadian Federation of Biological Societies organized a National Conference on University Research and the Future of Canada in Gordin's honour. Alas, within a few months, Gordin Kaplan had succumbed to the cancer that had been diagnosed in 1987. Perhaps the most fitting memorial to Gordin as a scientist and the one he would have been most proud of is "The Annual J.G. Kaplan Memorial Workshop" established by the Canadian Cell Biology Society in 1989.

Gordin Kaplan's voice will surely be missed at future meetings of biological societies in Canada and abroad, but his influence will be felt for many years to come. The example he has set for the promotion of communication between scientists and government, society and industry has already inspired others to follow in his footsteps and will continue to do so in the future.

Gordin is survived by his wife, Sylvia, his brother Edgar, his children Elizabeth and Michael, and a grandchild.



CONRAD LAFORTE, S.R.C.

Luc Lacourcière
1910–1989



MÉMOIRES DE LA SOCIÉTÉ ROYALE DU CANADA / CINQUIÈME SÉRIE / TOME IV / 1989



LUC LACOURCIÈRE est né le 18 octobre 1910 à Saint-Victor de Beauce et décédé le 15 mai 1989 à l'Hôpital Laval, Sainte-Foy. Il vivait à Beaumont dans une maison de plus de trois cents ans qu'il avait restaurée. Il était le fils de Henri Lacourcière et d'Emma Gosselin. Il fut inhumé dans sa paroisse natale.

Le professeur

Après de brillantes études primaires et secondaires dans plusieurs collèges, il poursuit ses études à la Faculté des lettres de l'Université Laval. Aujourd'hui, c'est devenu un événement tout à fait ordinaire qu'un laïque s'inscrive à la Faculté des lettres, mais, en 1932, cet enseignement était réservé aux membres du clergé et des communautés religieuses. Malgré tous les avis négatifs, il persista et en 1934 il obtint sa licence ès lettres de l'Université Laval et son diplôme de l'École normale supérieure. Maintenant que faire ? Il avait connu un professeur suisse, il va le rencontrer et voilà qu'il enseigne au Collège Saint-Charles de Porrentruy, dans le Jura suisse durant l'année scolaire 1936-37. De retour au pays, le Québec commençait à bouger mais très lentement; il fait de l'enseignement privé et, bientôt, avec sa sœur Agathe (madame Lacerte), et sur l'invitation de Mgr Alphonse-Marie Parent, il fait partie de la première équipe des cours d'été à l'Université Laval. Il sera dix ans professeur et assistant-directeur des cours d'été de français (1938-48).

Durant l'année scolaire 1938-39, il est professeur de latin au Collège Bourget, à Rigaud. En 1940, la Faculté des lettres de l'Université Laval l'engage comme professeur de langue et de littérature françaises. C'est aussi en 1940 qu'il commence ses enquêtes de folklore. Il les continuera dans ses vacances et ses temps libres, sans jamais vraiment s'arrêter.

Il fut professeur d'ethnographie et de folklore de 1944 à 1978. Il a aussi cumulé le poste de directeur du Département d'études canadiennes de 1969 à 1971. Il était professeur émérite depuis 1978. Quarante années d'enseignement à l'Université Laval, c'est une carrière bien remplie. Mais sa réputation de professeur en folklore lui attire des invitations de l'étranger. En 1953 et en 1965, il est conférencier invité de l'Institut scientifique franco-canadien et il donne des cours aux universités de Paris, de Lyon, de Poitiers, de Rennes et de Caen. À l'été de 1958, il est professeur invité au Folklore Institute of America (Indiana University). De janvier à mai 1966, il est professeur invité à l'University College de l'Université de Toronto. De janvier à juin 1967, il est professeur invité au Centre de philologie et de littératures romanes de l'Université de Strasbourg.

Comme professeur il a formé plus d'une génération de professeurs et de chercheurs. Il a dirigé une centaine de thèses de maîtrise et de doctorat. Non seulement il a dirigé la thèse de doctorat de la célèbre Antonine Maillet mais il a orienté sa carrière d'écrivain vers l'observation du peuple, en l'occurrence le peuple acadien, ce qui a fait sa valeur.

L'écrivain

En 1937, pendant qu'il enseignait à Porrentruy en Suisse, parurent deux

ouvrages magnifiant les richesses de notre patrimoine national, *Menaud, maître-draveur*, de Mgr Félix-Antoine Savard, et le *Romancero du Canada*, de Marius Barbeau.

En 1938, Lacourcière publie dans *Le Journal* un article intitulé, « Le drame de la fatalité dans *Menaud, maître-draveur* ». Par la suite, il échange une correspondance avec Mgr Savard, puis c'est la rencontre avec Mgr Parent. L'auteur de *Menaud* devint professeur à la Faculté des lettres et plus tard doyen de la même faculté de l'Université Laval.

Lacourcière s'est toujours intéressé à la littérature canadienne ou québécoise. En 1944, il fonde la Collection du Nénuphar qu'il publie chez Fides à Montréal. Elle compte aujourd'hui près de 60 volumes. C'est la plus prestigieuse qu'il existe au Canada français. Les ouvrages qu'elle contient sont souvent considérés comme des classiques. Il arrive parfois que des écrivains se plaignent de ne pas être réédités dans la Collection du Nénuphar, pour eux ce serait un honneur, une consécration.

Dans cette même collection, Lacourcière lui-même a publié la première édition critique qui a paru au Québec des œuvres d'un auteur québécois, *Émile Nelligan, poésies complètes 1896-1899*, texte établi et annoté par Luc Lacourcière. Nous savons qu'il avait sur le métier une autre édition critique, celle de Philippe Aubert de Gaspé, père et fils. Nous souhaitons qu'elle soit publiée un jour. Ce n'est pas le seul ouvrage qu'il a commencé ou dont il a inspiré l'idée à ses disciples; son enseignement et son exemple étaient capables de soulever l'enthousiasme pour les études et les recherches aussi bien en littérature qu'en folklore et en ethnographie.

Lacourcière a fait partie du comité de publication de la petite collection pour étudiants, éditée chez Fides, intitulée *Collection classiques canadiens*. Il a fait également partie du comité conseil pour le *Dictionnaire des œuvres littéraires du Québec*. Maurice Lemire avoue que l'idée de ce dictionnaire lui est venue au contact de Lacourcière.

De plus, Lacourcière a publié au-delà de 70 articles qui mériteraient d'être rassemblés en volumes divisés en deux parties, une pour les articles sur la littérature et l'autre pour ceux qui traitent du folklore et de l'ethnographie.

L'ethnologue

Luc Lacourcière, rendant visite à ses parents dans son village natal, rencontre Marius Barbeau, également beauceron, et Mlle Evelyn Bolduc, aussi beauceronne, en train de préparer un recueil de contes de tradition orale. Vous vous imaginez qu'il fut question de folklore et d'ethnographie et aussi de bourse. Lacourcière était attiré par cette science nouvelle. Après les démarches d'usage, il obtient une bourse de la Fondation Carnegie qui lui permet de parfaire ses connaissances dans cette discipline pendant l'année 1939-40. Il va poursuivre des recherches au Musée national à Ottawa et dans les bibliothèques américaines de New York, de Philadelphie, et de Washington. C'est dans l'une de ces bibliothèques qu'il rencontre Stith Thompson, le grand spécialiste du

conte populaire, de réputation internationale. Ils consultaient les mêmes ouvrages, ce qui les a amenés à entamer la conversation et à devenir des amis. Aussi quand plus tard Stith Thompson entreprit de préparer une nouvelle édition de *The Types of the Folktale*, c'est aux Archives de folklore de l'Université Laval qu'il commence ses recherches.

Luc Lacourcière, pendant cette année de recherches, compila une bibliographie considérable sur tous les sujets ethnographiques: chansons, contes, légendes, etc. Il a continué de l'enrichir au cours des années et elle lui a été profitable ainsi qu'à de nombreux étudiants et chercheurs.

De retour à Québec, il reprend ses cours à Laval et il commence des enquêtes de folklore. Le folklore et l'ethnographie sont devenus ses sujets de prédilection. Durant l'année scolaire 1941-42, il donne une série de conférences sur le folklore à Radio-Collège de Radio-Canada, ce qui non seulement le met en vedette mais fait prendre conscience à la population et aux autorités de la valeur et de l'importance de ce nouveau champ d'étude et de recherche.

Un jour, il y eut un dîner où étaient présents Lacourcière, Mgr Savard, Mgr Parent et Marius Barbeau. Il semble que c'est là qu'a germé l'idée d'un enseignement universitaire en folklore et en ethnographie à l'Université Laval. Toujours est-il qu'après bien des péripéties une chaire de folklore fut fondée, en 1944, à la Faculté des lettres de l'Université Laval. Luc Lacourcière en était le titulaire.

Au début, il était le seul à dispenser cet enseignement, à mi-temps puisqu'il conservait ses cours en littérature. Puis Marius Barbeau venait assumer un cours pendant 15 jours. Aujourd'hui ce cours a évolué, il est devenu un programme qui conduit à la majeure ou à la mineure du baccalauréat, à la maîtrise et au doctorat, et il y a en permanence sept professeurs qui l'assument.

Les enquêtes au début n'étaient pas faciles, bien qu'il y eût déjà une amélioration par rapport au temps où Marius Barbeau faisait des enregistrements sur des petits cylindres en cire. Les premiers enregistrements de Lacourcière l'ont été sur des disques de 12 pouces et, après la guerre, sur bandes magnétiques. Lacourcière a fait des enquêtes dans Charlevoix, dans la Beauce, en Gaspésie, un peu partout dans la province, au Nouveau-Brunswick et même à l'Île-du-Prince-Édouard. Le nombre de ses enregistrements dépasse les 4 500. Il était souvent accompagné par Mgr Savard et, plus tard, par d'autres chercheurs et par ses étudiants pour leur apprendre à continuer l'oeuvre de collecte si bien commencée. De nombreux étudiants sont devenus des collaborateurs.

Lacourcière a fondé des Archives de folklore pour conserver et classer ses documents sonores et ceux de ses collaborateurs pour pouvoir les étudier. En 1976, seulement les enregistrements sonores dépassaient les 30 000. En 1984, il y avait 1 245 collaborateurs qui avaient déposé soit des manuscrits, soit des enregistrements sonores, soit des photographies, etc. Rien d'étonnant que les Archives de folklore de l'Université Laval soient si renommées non seulement dans la province et dans le Canada mais dans le monde entier.

Pour la diffusion, il lança en 1946 une publication intitulée, *Les Archives de*

folklore, recueil illustré des traditions françaises d'Amérique du Nord. Vingt-quatre volumes sont parus à ce jour.

Luc Lacourcière était plus qu'un professeur, c'était un chercheur qui a fait de la recherche toute sa vie et qui en a inculqué le goût aux étudiants en même temps qu'il leur en apprenait les méthodes et les techniques. Au début, il englobait forcément toutes les disciplines du folklore et de l'ethnographie, mais avec le temps il a dû se spécialiser et son choix a porté sur le conte populaire. Il laisse un manuscrit qui promet de faire étape, *Le Catalogue raisonné des contes populaires français en Amérique du Nord* (en collaboration avec Margaret Low). Il paraîtra dans la collection dirigée par Jean-Claude Dupont, *Ethnologie de l'Amérique française*.

En 1961, Lacourcière organisa à l'Université Laval la 14^e Conférence annuelle du Conseil international de musique folklorique où 24 pays furent représentés. Ce fut un succès éclatant.

Titres et décorations

Parmi les titres et décorations qu'il a obtenus, retenons trois doctorats *honoris causa*: le premier de l'Université McGill en 1966, le deuxième du Memorial University, à Saint-Jean de Terre-Neuve en 1975, le troisième de l'Université Laurentienne de Sudbury en 1977.

Il fut élu membre de la Société royale du Canada en 1962; il fut fait Compagnon de l'Ordre du Canada en 1970; il fut membre de la Société des Dix à partir de 1966; il obtint le Prix Duvernay et la médaille de la Société Saint-Jean-Baptiste de Montréal en 1969, l'Ordre du Mérite et la médaille de la Société Saint-Jean-Baptiste de Québec en 1976, et la médaille du Conseil canadien de la musique en 1974, et j'en passe.

Pour perpétuer le souvenir de son oeuvre, le Célat (Centre d'études sur la langue, les arts et les traditions populaires en Amérique du Nord) décerne chaque année une Médaille Luc-Lacourcière pour récompenser l'auteur du meilleur ouvrage en folklore et en ethnographie.

Enfin, Lorne Laforge dans *Mélanges en l'honneur de Luc Lacourcière* (1978) écrit que « la variété même des sujets traités dans ces mélanges, et dont aucun n'est étranger aux préoccupations scientifiques de M. Lacourcière, témoigne elle aussi de la carrière d'un des derniers humanistes, possédant aussi bien des connaissances approfondies en littérature française et québécoise qu'en ethnographie traditionnelle, et exerçant aussi bien le métier de professeur que celui d'écrivain. »

HUGH CARMICHAEL, F.R.S.C.

George Craig Laurence
1905–1987





GEORGE CRAIG LAURENCE, physicist, born in Charlottetown, P.E.I., died in Deep River, Ontario on 7 November, 1987 in his eighty-third year. He was the first person in the world, after the discovery of nuclear fission in January 1939, to induce fission by neutrons in a *very large* quantity of uranium surrounded by carbon, to investigate the possibility that the fission chain reaction needed for a useful release of nuclear energy could be produced with these materials. He went on to play major roles in the development and control of the Canadian system for the production of electrical power from uranium surrounded by heavy water.

Many years before the fission process was discovered Laurence was involved with uranium. His first research experiment, suggested by Professor G.H. Henderson, F.R.S., after Laurence had obtained his B.Sc. at Dalhousie University in 1925, was to measure the ranges in air of the alpha particles emitted by Uranium I and Uranium II—the uranium isotopes now called U-238 and U-234. His success with this difficult experiment won him an 1851 Exhibition Scholarship which enabled him to work for a Ph.D. under Rutherford at the Cavendish Laboratory, Cambridge, from 1927 until 1930.

Laurence's Dalhousie work was referred to by Rutherford in 1930 in the book, *Radiations from Radioactive Substances*: "Recently the ranges for U-I and U-II have been measured by Lawrence by a new method. A thin film of uranium was placed on the cylindrical surface of an expansion vessel . . . A large number of α ray tracks were photographed and the ranges were measured. In terms of air at 15°C and 760 mm., the range of the α particles for U-I was found to be 2.73 cm, for U-II 3.28 cm. These ranges . . . are believed to be correct within 1 per cent."

Even though Laurence's thin film of uranium covered all of the surface available, the rate of emission of alpha particles was so small that, on the average, a track was seen only once in every eighty expansions. So, to avoid a prohibitive photographic cost, Laurence had to hold the camera shutter release in one hand, while with the other hand he slowly turned a crank to produce successive expansions. Whenever he saw the track of a particle he quickly snapped the camera and read and recorded the temperature and the pressure of the air in the vessel for that particular photograph. Eventually, after over 120,000 expansions, he had about 1600 photographs, of which 900 were suitable for measurement.

Unknown at this time was the fact that about 0.7 percent of the atoms of uranium are those of the isotope U-235, which is the key material for the production of atomic energy. This isotope also emits alpha particles; so it is fascinating that in 1926–27, Laurence must actually have seen and photographed the tracks of about 37 of the alpha particles emitted by U-235.

In Cambridge, Laurence compared magnetically the velocities of the alpha particles from four well-known alpha emitters to within 0.05 percent. His thesis for the coveted Ph.D. (Cantab) was not completed until after he had returned to Canada in 1930. A letter dated 7 February, 1931, from H.W. Phear says, "I

have today taken your PH.D. degree for you and have sent the certificate to your address in Halifax." Before going to Cambridge, Laurence had met Elfreda Elizabeth Blois who was also a student at Dalhousie. He married Elfreda on 2 January, 1931. She continues to reside in their Deep River home which contains many boxes and files filled with Laurence's paperwork.

For twelve years, from September 1930 until December 1942, Laurence worked in Ottawa with the National Research Council (NRC). He established and headed a laboratory to standardize the measurement of X-rays and radium gamma rays in terms of the roentgen. His mathematical studies of the difficult problems of measurements facing the radiologist are still being quoted in textbooks on radiation dosimetry. He also wrote, with Edith H. Quimby, a ten-chapter technical bulletin for the Radiological Society of North America, *The Measurement of Dose in Roentgen Therapy*, which was approved at their annual meeting in December 1939.

By this time, Canada was at war, and Laurence and his staff were busy introducing radiological inspection for manufacturers of military equipment. Nevertheless, Laurence kept abreast of the spate of publications following the discovery of fission and he soon realized that a nuclear fission chain reaction might occur if carbon was used to slow down neutrons between separate lumps of a very large quantity of uranium. He also knew that ample uranium oxide was available in Canada and he borrowed one tonne from Gilbert LaBine of the Eldorado Company, in several hundred small bags. By March 1940, he had designed a beautiful miniature reactor in a strong wooden container of roughly spherical shape, nine feet in diameter, lined with a neutron reflector of paraffin wax. It had a horizontal tube to support a source of neutrons at the centre to drive the reactor. The tube also allowed the neutron flux to be measured along a radius. By September, the reactor had been built, in secret in a locked room. The objective was to measure the neutron flux, first when the device was filled with ten tonnes of carbon powder (in larger bags) and, next when several hundred bags of uranium oxide formed a uniform lattice throughout the carbon. It could then be found, after elaborate calculation, whether a similar reactor of unlimited size would be self-sustaining.

At this time, Dr. J.D. Cockcroft visited Ottawa. He was so impressed with Laurence's work that he persuaded Imperial Chemical Industries of Britain to send a contribution of \$5,000. In December 1940, Laurence was asked to visit the United States where he met L.J. Briggs, Chairman of the Uranium Committee, and other scientists, including Fermi. An exchange of relevant secret reports lasting for nearly two years resulted.

The first U.S. lattice, using seven tonnes of uranium oxide in an eight-foot graphite cube, was built in July 1941. In November 1941, Fermi reported that oxide of greater purity than that ordered from Eldorado in the spring of 1941 was needed for a self-sustaining uranium graphite reactor. Laurence, with summer help from Professor B.W. Sargent of Queen's University, got the same result in the summer of 1942. He had had an initial lead time of one year, but

progress was slow because of his other duties. On 2 December, 1942, the first self-sustaining nuclear reactor in the world operated in the United States. Coincidentally, in December 1942, Canada's reactor expert, with his wife and their two daughters, drove to Montreal in a snowstorm to begin work as the senior Canadian scientist in the newly created Montreal Laboratory of the NRC.

The Montreal Laboratory had been established to enable Canada and Britain, in collaboration with the United States, to help the war effort by developing the heavy water uranium system as an alternative to the graphite uranium system. By late 1942, the U.S. had decided to use the latter system because the huge amount of graphite needed could, unlike heavy water, be obtained without delay. In January 1943, after their army had been placed in charge of their atomic bomb project, the U.S. collaboration ceased. Collaboration was not restored until Cockcroft became director at Montreal at the end of April 1944, with the mandate to build NRX, a high-power, heavy-water, uranium reactor. This was the origin of the Chalk River Nuclear Laboratories.

A low-power reactor, ZEEP, the first self-sustaining reactor outside the United States, was started up at Chalk River on 5 September, 1945. On 22 July, 1947, the NRX reactor, with the highest neutron flux and by far the most advanced design in the world, began operation. On 3 November, 1957, the NRU reactor, with five times the neutron flux of NRX, began operation.

Under Cockcroft until 1946, and then under Dr. W.B. Lewis, Laurence directed the groups developing and often fabricating the new instruments needed for ZEEP, NRX and environmental monitoring. Then, from 1949, he directed the branches involved in the design of NRU and also a branch charged with planning the Canadian approach to nuclear power, formed early in 1954. By this time, in April 1952, the Crown Corporation, Atomic Energy of Canada Limited (AECL), had been formed.

In December 1952, the NRX reactor suffered a very serious accidental power surge due to operator error and malfunction of the shutoff rods. The centre of the reactor was destroyed and the whole building was contaminated with radioactivity. Cleanup and repair took fourteen months. Laurence was chairman of the investigating committee. The accident had a profound effect on Laurence, which lasted for the rest of his life. As a result, he then devoted himself almost entirely to ensuring the safety of nuclear power in Canada. First, he got his team of chemists, physicists, and engineers designing the NRU reactor to keep improving the control system whenever new ideas occurred or new instruments became available. The reconstructed NRX reactor continually benefitted from this work. Next, in 1956, while still with AECL, Laurence became chairman of the Reactor Safety Advisory Committee, newly created by Dr. C.J. Mackenzie, President of the Atomic Energy Control Board (AECB). Finally, in 1961 he succeeded Mackenzie as President of the AECB until his mandatory retirement at age sixty-five in 1970. In these positions he was instrumental in establishing the unique Canadian system for the regulation of reactor safety. In addition to nuclear reactors, the AECB had control of all

equipment and materials producing nuclear radiation in Canada. Also, the AECC could arrange for the funding of major nuclear installations in the universities. Thus, Laurence had become a very influential person. Of himself Laurence said, "I feel I was of most help in setting the procedures and practices for safety control in nuclear power stations." He spent much of his last year writing for the Deep River Science Association an excellent lecture entitled, "Safety of Nuclear Power in Canada." (Printed in *Diversa*, Vol. III, No. 3 [1989], pp. 16-26.) Because of illness he had to sit and to read it, in contrast with his customary habit of striding vigorously on the platform while the audience listened to a well-rehearsed extemporaneous delivery.

Laurence was appointed a Member of the Order of the British Empire for his work during the war. In 1966, the Canadian Association of Physicists awarded him its Medal for Achievement in Physics. In 1975, the Canadian Nuclear Association presented him with the W.B. Lewis Medal. In 1988, in San Diego, at the annual meeting of the American Nuclear Society, the President of the ACEL Research Company accepted, on behalf of the Lawrence family, a special plaque awarded posthumously to Dr. G.C. Laurence. It was later given to his wife by the President at a ceremony on top of the NRU reactor.

An appreciation by Fred Boyd in the *Bulletin of the Canadian Nuclear Society* says: "Although he claimed not to be religious, his manner and life reflected all that most consider noble and good, which, with his scientific excellence, combined to make him a very special person."

RAMSAY COOK, O.C., F.R.S.C.

Arthur Reginald Marsden Lower
1890–1988



TRANSACTIONS OF THE ROYAL SOCIETY OF CANADA / SERIES V / VOLUME IV / 1989



ARTHUR LOWER once maintained, with only a slight twinkle in his eye, that he "was called of God to be an historian." That revealed a lot about the puritan conscience of this devoted historian of Canada, a man who read and wrote almost as much in retirement as he had while carrying a full teaching load. Being an historian was never merely a way of making a living—and a good thing, too: it was a calling. The justification for that calling was his conviction that an historian of Canada had a special responsibility to explain, and through explanation to give legitimacy to, Canada. "Writing Canadian history," he confessed in the preface to his most widely read book, *Colony to Nation* (1946), "is an act of faith, the substance of things hoped for."

A huge man—and even so, often larger than life—Arthur Lower seemed gruff and even cantankerous. He loved to provoke, to shock and to argue. He respected those who answered back. But underneath the superficial belligerence was a kind and tolerant man. Both his belligerence and his kindness stemmed from a deeply rooted Methodism of the liberal variety. Though he had no systematic theology and often mocked those "Calvinists" who did (Anglicans he thought merely social climbers), he adhered firmly to the conviction that faith must be demonstrated in works. That view led Lower to participate regularly in public affairs. It also led to the belief that history written simply to satisfy one's curiosity or to win a promotion was worth very little. History, for Lower, was philosophy teaching by example. Therefore his nationalist historical writing was never mere boosterism; indeed it was most often a form of social criticism.

Three themes characterized Lower's most widely read works: *Colony to Nation* (1946), *This Most Famous Stream: The Liberal Democratic Way of Life* (1954), and *Canadian in the Making* (1958), and also, not surprisingly, his autobiography, *My First Seventy-Five Years* (1967). The first was Canada's struggle for autonomy within the British Commonwealth. Self-government, for a liberal nationalist, was the *sine qua non* of nationhood. The second theme that pre-occupied Lower was what he called the primary antithesis of Canadian life: the presence of two cultures in a single nation state. More than any other Canadian historian Lower insisted that understanding French Canada was a prerequisite to understanding Canada. Though his own French never lost its Barrie, Ontario, accent, he never failed to make the effort. His final theme was the fundamental importance of liberty as the measure of the good society. The balance among nationalism, cultural duality, and liberty was not always held in perfect equilibrium in Lower's writing, but he never completely lost sight of any one of them.

Though he loved to write about grand themes and in broad sweeps—his last book, *A Pattern for History* (1978), was Toynbee in conception—he could deal meticulously with a more specialized subject. *The North American Assault on the Canadian Forest* (1938) and *Great Britain's Woodyard* (1973) demonstrated that talent. They also revealed Lower's lifelong concern about the rape of Canada's natural environment. He was, at heart, an outdoorsman who loved

boating, sugaring-off, and the open air as much as he loved his study and his books. His *Unconventional Voyages* (1953) revealed this side of the man, though it was present in all of his writing.

Arthur Lower was a physical and intellectual activist, and he found the confinement of his last years very frustrating. Throughout his life the principal outlet for his activism was his teaching. He was a demanding teacher who loved controversy and argument and accepted nothing on authority alone. That same characteristic led him to the defence of civil liberties, particularly during World War II when he was a sharp critic of the Defence of Canada Regulations and a founding member of the Winnipeg and Canadian Civil Liberties Associations.

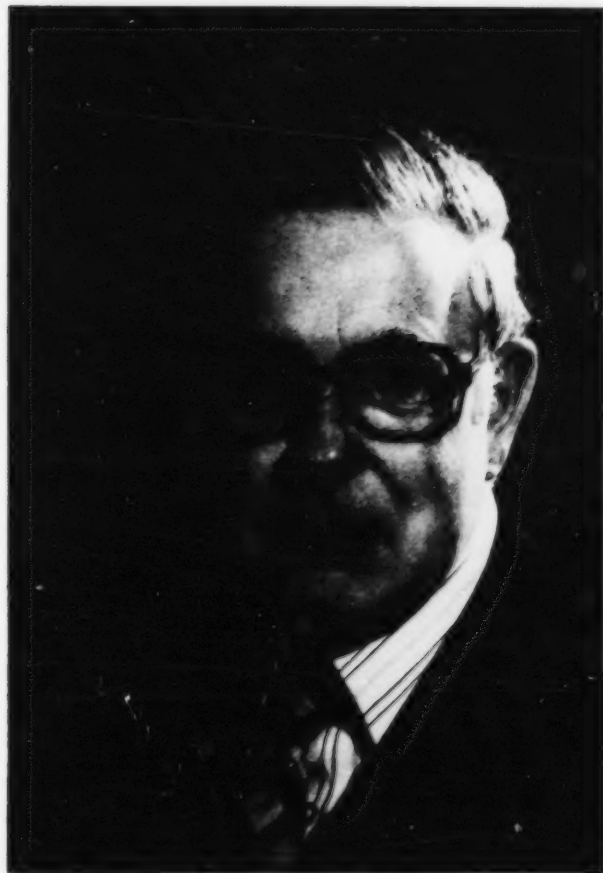
Born in Barrie, Ontario, in 1890, he graduated from the University of Toronto, served in the Royal Navy during World War I and then, after a period of employment at the Public Archives of Canada, he returned to graduate study, this time at Harvard. In 1929, at the age of forty, he was awarded his PH.D. For the next eighteen years he taught at United College in Winnipeg, years he always regarded as something of a golden age. Nevertheless in 1948 he returned to his native province, accepting an appointment as the Douglas Professor of Canadian History at Queen's University. He spent the remainder of his long life in the Kingston area teaching, writing, and fighting for the causes in which he believed, including the defence of Kingston's historic buildings against the power of bulldozers and the greed of developers. During these years he built on his growing reputation, both within and outside the academy, as Canada's best-known historian.

His scholarship and public service won Lower numerous honours: President of the Canadian Historical Association (1943), President of the Royal Society of Canada (1961), the Tyrrell medal of the Royal Society (1948), the Governor-General's Literary Award for Non-Fiction (1946 and 1954), Companion of the Order of Canada (1968), and numerous honorary degrees.

Arthur Reginald Marsden Lower died quietly at home in Kingston on 7 January, 1988, at the age of 98. His wife, Evelyn Marion Smith, pre-deceased him in 1975. He is survived by his daughter, Louise, and three grandchildren. To the end of his life he believed, as he had written in *Colony to Nation*, that "In every generation Canadians have had to re-work the miracle of their political existence. Canada has been created because there existed in the hearts of its people, a determination to build for themselves a home. Canada is a supreme act of faith."

J. L. McLACHLAN, F.R.S.C.

Charles Robb Masson
1922–1988



TRANSACTIONS OF THE ROYAL SOCIETY OF CANADA / SERIES V / VOLUME IV / 1989



CHARLES ROBB MASSON died of a heart attack at his home in Halifax, on 12 March, 1988. He was born on 8 September, 1922, in Aberdeen, Scotland, and obtained his PH.D. in chemistry from the University of Aberdeen in 1948. His entire professional employment was as a Research Officer with the National Research Council's laboratory (ARL) in Halifax, Nova Scotia where he established a reputation as a world leader in chemical metallurgy. He retired in 1986 after thirty-five years with the NRC.

Upon leaving the University, Charles was among the first recipients of a NRC post-doctoral fellowship working with E.W.R. Steacie, then Director of the Division of Pure Chemistry at the NRC. Charles was granted a further fellowship at the University of Rochester, and in 1951 he was invited by Steacie, who had just become President of NRC, to apply for a position at the new NRC laboratory being established in Halifax. Charles joined the staff of ARL in September 1951 as its first physical chemist. Some of the first work he did at ARL was on molecular-weight determinations and degradation of seaweed polysaccharides, in which he used viscosity, osmotic, and photochemical techniques that he had developed previously at Aberdeen and Ottawa. During this period, Charles also studied the rates and mechanisms of elementary reactions in the gas phase, a continuation of his research from Ottawa and Rochester.

It was suggested by a NRC Associate Committee that research at ARL should be initiated on physical-chemical reactions at high temperatures, especially those of interest to the iron and steel industry, which was the major secondary industry in Nova Scotia. At that time there was little fundamental work being done in Canada on the chemistry of pyrometallurgical processes, and it was recommended that a physical chemist undertake such studies at ARL. Charles was offered and accepted the challenge and returned to Britain to spend some months at the British Iron and Steel Research Association laboratories in Battersea. When Charles returned to ARL he organized the High Temperature Chemistry Section, specializing in chemical reactions important in the manufacture of iron and steel. These processes, taking place at about 1600°C, involve two main reactants, molten iron and molten silicate slags. Charles took it as his life's work to investigate the chemistry of such slags.

It became appreciated that molten silicates were concentrated ionic solutions, including the SiO_4^{4-} ion. Charles, who had worked on polymerization at Aberdeen, began to consider the possibility that slags may also contain dimeric, trimeric, and so forth silicate ions. Beginning in 1966, he presented a series of theoretical papers, developing a mathematical concept by which the ionic distribution in basic binary slags could be described by one adjustable parameter. This theory allows the metallurgically important oxygen-ion concentration to be calculated for a wide range of experimental compositions. At the time of his death, Charles was working on the extension of his mathematical treatment to the more complex ternary systems. He was able to confirm his highly original theoretical studies by careful and meticulous experimentation. This research not only had significant scientific quality, but also important

implications for industrial metallurgy. His research resulted in more than one hundred scientific publications and numerous recognitions and awards, including in 1984 the Alcan Award of the Canadian Institute of Mining and Metallurgy.

Over the years, there was increasing emphasis on industrially related projects. However, Charles's fundamental, long-term research was that on which he relied for continuity of purpose and to maintain his role in the international community. On his retirement in 1986, Charles was named "Researcher Emeritus" of the NRC, only one of seven such appointments initially made. Larkin Kerwin, then President of NRC, remarked that this appointment was in recognition of his "brilliant achievements and leadership" and contribution to NRC's reputation and excellence. The work that Charles had so admirably developed at ARL since its doors were formally opened in 1952 terminated with his death, thus closing what has undoubtedly been a very significant chapter in the scientific work done at the laboratory.

A large number of PDF's and visiting scientists came to work with Charles during his career at ARL. These associations were of immense satisfaction to him, and he took great pride in the people with whom he had collaborated and trained over the years. He held academic appointments at Dalhousie University, the Technical University of Nova Scotia, and the University of New Brunswick, and on separate occasions had been a visiting scientist at Imperial College, London, and the University of Aberdeen. He was active in many scientific societies and organizations and had served on the executive of a number of them. A strong supporter of the Nova Scotian Institute of Science, the oldest scientific society in Canada, he had served the Institute in numerous capacities.

Charles was a quiet-spoken person who retained a soft Scottish burr in his speech. Though outstanding in the competitive arena of science where prima donnas and controversy abound, Charles, almost paradoxically, was a gentleman in the literal sense of the word, one who was exceedingly kind and considerate, and these characteristics affected all who knew him. He was guided by a consistent set of principles that he was very forceful in expressing and maintaining. For many he was the laboratory's scientific conscience and the staff looked to him for guidance in difficult situations resulting, for example, from the encroachment of the pervasive bureaucracy, and his counsel and comfort were sought on numerous occasions.

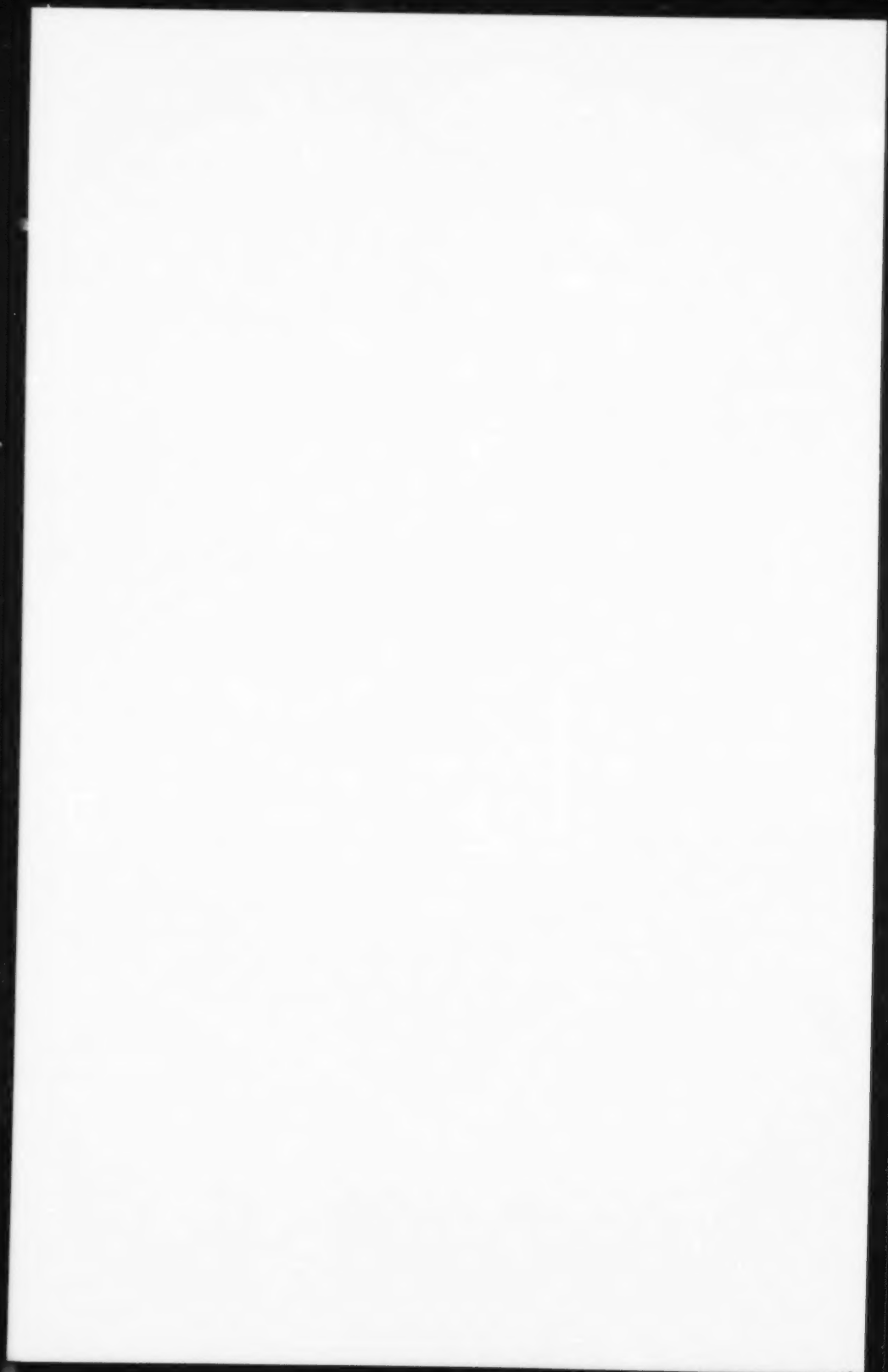
In his earlier years, Charles had been an enthusiastic outdoor sportsman. At the age of forty, however, he was stricken by his first heart attack and subsequently directed his interests to gardening. He was especially fond of primroses, and he maintained a number of varieties and species of these beautiful, early flowering plants. Perhaps these plants and gardening say something about this gentle and considerate person. During the last twenty-five years of his life, Charles suffered a second heart attack and underwent near-fatal by-pass surgery. His scientific achievements are, thus, that much more remarkable. Charles is survived by his Scottish-born wife and two daughters in Halifax.

ROGER DEHEM, S.R.C.

Tadek I. Matuszewski
1925–1989



MÉMOIRES DE LA SOCIÉTÉ ROYALE DU CANADA / CINQUIÈME SÉRIE / TOME IV / 1989



LE 11 janvier 1989 s'éteignait notre collègue Tadek Matuszewski au terme d'une vie marquée de noblesse de coeur et d'exceptionnel mérite.

Né à Varsovie, le 22 mai 1925, au sein d'une famille d'universitaires, Tadek Matuszewski fut durement éprouvé par la guerre qui ravagea son pays alors qu'il n'avait que quatorze ans. Actif dans la Résistance, il fut arrêté et incarcéré dans un camp de concentration pendant près de deux ans. Survivre à de tels tourments tient du miracle, mais aussi d'une force de caractère peu commune. Après l'armistice, notre collègue put renaitre à la vie à Londres, où il étudia à University College et à la London School of Economics. C'est dans cette dernière qu'il se spécialisa en statistiques appliquées.

Armé de sa compétence, Tadek Matuszewski commença sa carrière à l'Université de Colombie britannique, où il enseigna de 1955 à 1961. Les cinq années suivantes furent consacrées à l'Université de Montréal, où il fut le pionnier de l'économétrie. En 1966, il passa à l'Université Laval où on lui assura l'autonomie de son laboratoire d'économétrie, centre d'intense activité dont l'excellence et l'originalité des travaux furent vite reconnues sur le plan international.

C'est à l'apogée de sa carrière que notre collègue fut derechef frappé par le sort. En 1973, il subit une défaillance pulmonaire qui allait handicaper et écourter le reste de ses jours. Le joug de la fatalité fut heureusement adouci par le dévouement inlassable de son épouse Janine.

En 1976, Tadek Matuszewski eut le courage d'entreprendre une nouvelle étape dans sa carrière. Il assuma la fonction de directeur de l'économétrie au Bureau de la Statistique du Québec. Une nouvelle fois, il avait l'occasion de manifester ses talents et ses mérites de pionnier. Comme maître d'oeuvre consciencieux et directeur d'équipe, il imposa la discipline et la rigueur qui lui étaient naturelles.

De la vie professionnelle abrégée par les épreuves, les années 1960 furent les plus fécondes et celles qui donnèrent à notre collègue un renom international. Ce fut principalement dans le domaine des tableaux statistiques inter-industriels que Tadek Matuszewski fit oeuvre novatrice. Ses innovations furent jugées à ce point remarquables et utiles qu'il fut invité à l'Université Harvard en 1968, et à l'Université de Californie (L.A.) en 1969. En 1965 il avait déjà été l'invité de la University of Western Ontario, et en 1970 il le fut encore à Namur (Belgique).

Tandis que le Laboratoire d'économétrie à Laval bourdonnait d'activité, que des étudiants gradués s'y formaient sous la tutelle dévouée du maître, qu'il attirait des visiteurs distingués de partout, voire de l'Europe de l'Est, notre éminent collègue ne se départit jamais de sa modestie. Sa fierté répugnait à la mise en scène et à la publicité.

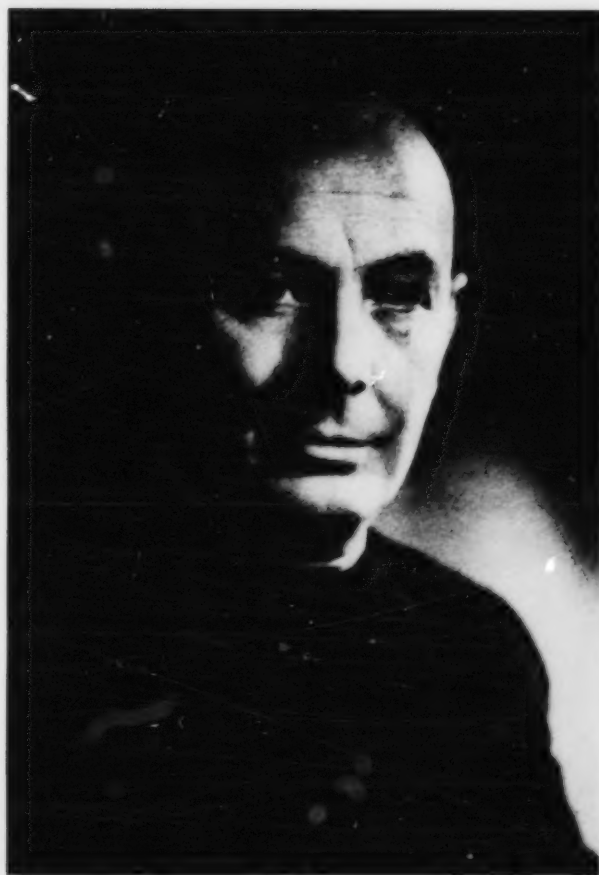
L'authenticité, ou l'honnêteté intellectuelle, de Tadek Matuszewski se révéla explicitement dans le discours présidentiel qu'il prononça devant l'Association canadienne d'économie en 1970. Sous le titre, « Misère de l'économie, » le grand maître que fut Tadek Matuszewski révéla la vanité d'une science dont les progrès sont plus apparents que réels : « On construit les

modèles que l'on peut manipuler, et on les manipule parce que l'on n'arrive pas à comprendre la réalité dans toute sa richesse Pire encore, au fur et à mesure que le nombre d'économistes augmente, les constructeurs et les manipulateurs des modèles peuvent gagner leur vie et même se faire une grande réputation en manipulant avec de plus en plus de virtuosité des modèles qui deviennent de plus en plus futiles et même dangereux, si on les prend au sérieux. . . . [L]e désir de persuader nous entraîne à simplifier à outrance . . . en économique il est fort difficile de dire quoi que ce soit qui serait à la fois vrai et original. » (*Revue canadienne d'économie*, XIII [4], nov. 1980, pp 539-47.)

La philosophie de la vie et de la science que Tadek Matuszewski avait acquise par l'expérience et une culture historique qu'il n'avait cessé d'entretenir faisait de notre regretté collègue un homme à part, impénétrable pour la plupart, mais hautement estimé par le petit nombre de ceux à qui il s'est confié. Comme tout sage, il n'avait de mépris que pour la sottise. Au-dessus de toute vanité, il reconnaissait et cultivait les valeurs véritables, les seules qui permettent l'espérance en l'immortalité.

J. AMBROSE RAFTIS, F.R.S.C.

James Reginald O'Donnell
1907–1988



TRANSACTIONS OF THE ROYAL SOCIETY OF CANADA / SERIES V / VOLUME IV / 1988



JAMES REGINALD O'DONNELL was born on 19 August, 1907, near Jarvis, Ontario. After elementary education in local public schools and two years at St. Jerome's College in Kitchener, Ontario, he entered St. Michael's College in Toronto. O'Donnell was received into the Congregation of St. Basil in 1928 and ordained priest on 21 December, 1932, by Bishop Alexander MacDonald in St. Basil's Church.

By the time of his ordination, Father O'Donnell's variety of talent for both languages and philosophy as well as his immense capacity for hard work had become well known to his academic advisers. This led to his selection as one of the founding staff members of the fledgling Institute of Medieval Studies. To this end he studied from 1933 to 1935 at Cracow, Breslau, and the *École Pratique des Hautes Études* and *École des Chartes*, Paris. After returning to Canada he joined not only the Institute but also the Department of Classics of the University of Toronto. In 1945 he obtained his doctorate in philosophy from the University of Toronto.

From the mid-1930s on Father O'Donnell's numerous Latin and Greek classes, his rigorous seminars in palaeography and the edition of texts, and his application of the methods of traditional classical scholarship to medieval sources became the heart of the Licentiate Programme of the Pontifical Institute. The collection of manuscript catalogues, studies, and facsimiles which he assembled and constantly enlarged was both basis and impetus for the Institute's present extensive holdings in this area. His vigorous role in the Department of Classics, which he further served as Acting Chairman in 1961-62, was in accord with his firm belief that the entire classical heritage constituted a foundation for enhancing the understanding of Christian culture. He never lost touch with the high standards of his European mentors—Clovis Brunel, Alphonse Dain, Josef Koch, and Charles Samaran—and occasionally found it difficult to transmit the same commitment to the more pragmatically minded students of a later age. It is said that an oral examination by Father O'Donnell was an event not easily forgotten. Despite this almost legendary academic severity his courses attracted students from the Departments of Classics, English, History, and Philosophy as well as from the Institute itself. He supervised numerous doctoral theses with a vigilant eye; their authors (who were later grateful to him) soon came to realize that he could never be persuaded to deviate even slightly from his own standards.

At the same time, Reginald O'Donnell insisted upon a continually changing approach to the study of medieval culture. For this reason he broadened the Licentiate Programme to include the training in diplomatics required by the growing number of historians in the 1960s. Under his energetic and imaginative direction the Institute microfilm collection grew rapidly to become a major and often irreplaceable depository of manuscript and archival materials. This same creative genius led to his cooperation with the late Professors Peter Brieger and Bertie Wilkinson in forming the Centre for Medieval Studies of the University of Toronto. The establishment of the Toronto campus as the premier place for

medieval studies in North America owes much to Reginald O'Donnell, who was tireless in developing its various resources, facilities, and programs.

His publications cover the entire classical tradition from the earliest Christian Hellenism to the flowering of medieval philosophy and Renaissance intellectual life. This broad range is also reflected by his penetrating book reviews in such diverse journals as *The Catholic Historical Review*, *Isis*, *Latomus*, *The Modern Schoolman*, *The New Scholasticism*, *Phoenix*, *Speculum*, and *The Thomist*. He will be best remembered by the scholarly world for his critical editions of Themistius, Nicholas of Autrecourt, and William of Sherwood. But the dry, scientifically rigorous *apparatus* of these Latin texts does not convey adequately his liveliness of intellect, which was open to questions of a philosophical, theological, or philological nature. On rare occasions he wrote about these issues, as, for example, in a seminal essay on the influence of Calcidius, the third-century translator of Plato. Another such instance was his address to the Royal Society of Canada when he chose to ask the ageless question "What has Athens to do with Jerusalem?" The answer was the blending of philosophy and religion characteristic of the Middle Ages.

Father O'Donnell had a personal dignity that was unmistakable, as well as a seriousness and originality of mind and the courage to state his views forthrightly. He was unwavering in his standards for intellectual discussion and debate. While he did not pretend to sit in judgment on his fellow scholars, he fully succeeded in conveying to them his own high ideals. His tenure of the editorship of *Medieval Studies* from 1970 to 1974 was notable for the practical application of these ideals.

Reginald O'Donnell's reputation as a world-class scholar was recognized by his election as a Fellow of the Royal Society of Canada in 1960, a Canada Council Senior Fellowship held at Florence and Rome in 1960-61, a Fellowship to the Institute for Advanced Study, Princeton, in 1968-69, and such post-retirement honours as an honorary doctorate on the occasion of the fiftieth anniversary of the founding of the Pontifical Institute in 1979.

The career of James Reginald O'Donnell epitomized the ideals of a Fellow of the Royal Society in the humanities. His training and his lifelong interests bridged the boundaries of several disciplines. His interest in people went much farther. Over recent months many professors have paid tribute to his keen sense of academic potential in a PH.D. candidate and his patient and sensitive ear for the imaginative student who becomes thwarted by the "system." He personified the humanist who is capable of embracing scientific methodology but retains humanity as the final guideline.

HELEN S. HOGG, F.R.S.C.

Joseph Algernon Pearce
1893–1988





JOSEPH ALGERNON PEARCE came to the end of a long and illustrious life on 8 September, 1988 in Victoria, B.C., where he had resided since 1924. He was the third Director of the Dominion Astrophysical Observatory there, and a former President of the Royal Society of Canada. One of the important honours of his life came a few days too late for him to know of it. In its *Circular* on 27 August, 1988 the International Astronomical Union announced that Minor Planet no. 3304 had been named *Pearce* after him. For many of us his outstanding characteristic was his enormous *joie de vivre* in the many facets of his life. Two Fellows of the Academy of Science of this Society have already recounted many details of his life. At the Memorial Service for Dr. Pearce in Victoria on 15 October, 1988, Dr. Alan Batten from personal recollections outlined the importance of his life and work. And a former Director of the Observatory, Dr. Kenneth O. Wright, in the February 1989 issue of the *Journal of the Royal Astronomical Society of Canada* has given a detailed account of Dr. Pearce's scientific work.

Joseph Pearce was born in Brantford, Ontario, on 7 February, 1893, of United Empire Loyalist lineage. It gave him great satisfaction that the home of his maternal ancestor Sir William Campbell, Chief Justice of Upper Canada, had become one of the heritage showplaces of Toronto on the corner of Queen Street and University Avenue. He graduated in 1913 from Brantford Collegiate Institute and entered the University of Toronto in the mathematics and physics course, but his studies there were interrupted by World War I when he enlisted in the Canadian Armed Forces. He served overseas in France and Belgium, and when the war ended he retired with the rank of major and resumed his studies at the university.

There his interest in astronomy and the inspiration of the noted teacher Dr C.A. Chant led him to pursue astronomy as his career. He received the Bachelor of Arts degree in 1920 and the M.A. in 1922. Then he continued his studies at the Lick Observatory. In 1924 he was appointed to the staff of the Dominion Astrophysical Observatory, but continued his studies at the University of California, from which he received his PH.D. in 1930. Another doctorate came to him in 1955 with an HON. D. SC. from the University of British Columbia. From 1924 on he was on the staff of the Observatory, rising through various ranks until he became its Director in 1940.

Joseph Pearce was an exceptionally keen and enthusiastic observer with the telescope. When he began working with the 72-inch at the D.A.O. it was then the second largest telescope in the world, and remained so until the 74-inch of the David Dunlap Observatory of the University of Toronto went into action in May 1935. His diligent photography of the spectra of the hot blue and white stars (spectral types B and A) combined with that of the first Director of the D.A.O., Dr. J.S. Plaskett, led to an outstanding piece of astronomical research recognized world-wide as the Plaskett-Pearce observation of the rotation of the galaxy. Several noted astronomers, especially J.H. Oort and B. Lindblad, had theorized that the Milky Way system, our spiral galaxy, is rotating around its

distant centre, but Plaskett and Pearce were the first to acquire the observational results needed to prove it. After Dr. Plaskett's retirement, Joseph Pearce continued the program with Dr. R.M. Petrie. In addition, this observational work on radial velocities, the speeds of stars in line of sight from earth, led to his becoming an expert on eclipsing and spectroscopic binary stars. He published many orbits of these, but also acquired much material which remained unpublished and has now been passed on to other observers for their benefit.

While Joe Pearce was producing significant research results, many of them from long, cold nights with the telescope, he was also giving outstanding training to students and junior assistants temporarily employed at the Observatory. One of these, Dr. Peter M. Millman, has ever since referred to Dr. Pearce as his "professional godfather" because of his emphasis on the ideals of a scientist and the invaluable scientific training he gave.

Joe Pearce thoroughly enjoyed societies and meetings. He esteemed the Royal Society of Canada most highly. He had been elected a Fellow in 1931 and became President of Section III in 1946, Vice-President of the Society in 1948, and President in 1949. During his presidency he initiated local meetings of Fellows in various regions of the country. While the success of these meetings has had fluctuations, the extra opportunity to meet together has become important when multiple convocations of universities and annual meetings of many societies draw attendance away from the annual meeting of the Society. Dr Pearce also made efforts toward increasing the importance for the Government of more consultation with the Society. When I myself became a Fellow of the Society in 1946, Dr Pearce embodied the Society for me. On one unforgettable occasion, at a meeting of the astronomy section, Joseph Pearce was the speaker and I was the audience. In those days the number of Fellows in astronomy was very small and his was the first paper on the program. Subsequently, to our relief, the audience increased.

He gave great support to the Royal Astronomical Society of Canada, and was its Vice-President from 1934 to 1939. His term as President, begun in 1940, was cut short by his appointment as Director of the D.A.O. with its many responsibilities, following the sudden death of Dr W.E. Harper. Internationally he was well known through his participation in other important societies. In the International Astronomical Union he served on three Commissions and was President of Commission 30, Radial Velocities, 1948-52, and President of the Sub-commission on Standard Velocity Stars, 1952-55. He was a member of the American Astronomical Society and its Vice-President 1943-44, the Astronomical Society of the Pacific, the American Association for the Advancement of Science, and the Société Astronomique de France. Outside of astronomy he was a Freemason and his foremost pursuit was philately. He was a charter member of the Canadian Philatelic Society and had built up an extensive collection of early Canadian and British Empire stamps. Modern Canadian stamps interested him, too, and when he wrote personal letters he placed the

stamps on the top middle of the envelope so that the value would be enhanced when the date and city were imprinted on them.

In 1917 he married Esther Mott and his home life with his children and garden became a very important part of his life. Esther died in 1945 and in 1947 he married Elizabeth Allan. After his resignation as Director in 1951 they moved to Union Street where Betty continued to make a beautiful home. For some years he engaged in bee-keeping. A vivid vignette in my mind is of Joe Pearce and the renowned astronomer Otto Struve moving about the Pearce garden wearing bee-helmets with veils. He was very fond of flowers as well as of the climate of Victoria, and he used to mail bouquets of pussywillows to his friends in eastern Canada shivering in the cold of mid-February, with a reminder that Valentine's Day usually brought out the first wild flowers on Observatory Hill.

In 1982 he gave up his cherished home in order to join his dear wife Betty in Glengarry Hospital. His research and public lecturing had gradually come to an end. His room at the hospital was more like an office-study than any other hospital patient's room I have ever seen. Shelves of all sorts of books, including photograph and stamp albums as well as those on astronomy, lined the walls. He dropped formality there and wanted to be called "Grandpa Joe." He was able to celebrate his ninety-fifth birthday in Glengarry with relatives and friends.

He was proud of his command of the Greek language. As Alan Batten has said, a line from Tennyson's "Ulysses" seems appropriate for Joseph Pearce: "I am a part of all that I have met."

Joseph Pearce is survived by his wife Elizabeth, his daughter Josephine, his son Richard, and grandchildren Mark, Heather, and Lesley Pearce.



VIANNEY DÉCARIE, S.R.C.

T.R.P. Louis-Marie Régis, O.P.
1903–1988





LE P. LOUIS-M. RÉGIS, huitième de treize enfants, est né en 1903, à Hébertville (Lac St-Jean) et est décédé à Montréal, au Royal Victoria Hospital, le 2 février 1988. Un de ses ancêtres était Montagnais.

Il fit ses études primaires à Chicoutimi. C'est au Collège Sainte-Anne, de Church Point (N.E.), qu'il commence ses études secondaires,—d'où son bilinguisme—pour les terminer au Collège de Chicoutimi (ce qui lui valut le surnom « Chicoutimi » que lui décernèrent ses confrères français).

Entré chez les Dominicains en 1926, il fera deux années de philosophie et une de théologie au couvent d'études de la Province dominicaine, à Ottawa. Il poursuivra ses études supérieures au couvent d'études des Dominicains de la Province de Paris, alors intallé à Kain, en Belgique, études couronnées par le grade de lecteur en théologie (équivalent du doctorat). Il y aura pour professeurs d'illustres médiévistes et théologiens: les PP. Mandonnet, Sertillanges, Chenu; l'un de ses confrères, le P. Festugière, éminent helléniste, lui suggéra le sujet de sa thèse de doctorat en philosophie. Il fera des séjours à Oxford, Cologne, et Paris.

De retour au Canada, le P. Régis obtiendra le doctorat en philosophie de l'Université de Montréal, en 1935, avec la thèse, *L'opinion selon Aristote* (Paris: Vrin), ouvrage devenu classique et depuis longtemps épuisé.

Son activité d'enseignement et de recherche s'étendra sur un demi-siècle (1933-83). Il débutera au Collège dominicain d'Ottawa, où il enseignera plusieurs disciplines: logique, « méta-psychologie, » philosophie de la nature. (Il fit une longue recension critique du livre de J. Maritain sur ce sujet.) Ses recherches et ses réflexions sur l'être l'amènèrent à mettre en question l'interprétation d'Et. Gilson dans *Being and Some Philosophers* (Toronto: Pontifical Institute of Mediaeval Studies, 1949); à la demande de ce dernier, le compte rendu critique du P. Régis fut imprimé en appendice dans les éditions subséquentes.

En 1942, il quitta Ottawa pour venir enseigner à l'Université de Montréal, où il fut successivement directeur de l'Institut d'études médiévales et doyen de la Faculté de philosophie (1952-1960). Il démissionnera d'ailleurs de ce poste, tout comme de la présidence de l'Académie des Lettres à la Société royale: l'administration avait peu de charmes pour lui. Il continuera son enseignement jusqu'en 1971, alors qu'il prit sa retraite; ce qui ne l'empêcha pas de devenir professeur invité au Collège dominicain d'Ottawa (1970-83).

Sa renommée de professeur et de pédagogue fait qu'on l'invite dans d'autres universités: St-Louis University (St-Louis, Missouri), Pontifical Institute of Medieval Studies (Toronto), Séminaire international de philosophie (Toumlinine, Maroc), McGill University (Montréal). Il serait trop long de mentionner ses nombreuses conférences: on retiendra toutefois ses causeries à Radio-Canada et au Collège Sophie-Barat, qui pendant plusieurs années ont attiré un large public.

Outre sa thèse sur Aristote, le P. Régis a publié *Saint-Thomas and Epistemology* (Milwaukee, 1946), *L'Odyssée de la métaphysique* (Montréal, 1949),

Epistemology (550 p., « Christian Wisdom Series, » New York. MacMillan, 1959). Très sensible aux courants philosophiques contemporains, il reprenait constamment ses cours dont une *Initiation à la philosophie* pour « apprentis philosophes » où n'apparaissait aucune référence à la scolastique et au thomisme.

Professeur exceptionnel, qui savait présenter un problème aussi bien à des étudiants spécialisés qu'à des personnes soucieuses de culture générale, le P. Régis était un exemple vivant pour ses auditeurs. Travailleur infatigable (pour se reposer d'une grippe, il lisait Platon ou . . . E.S. Gardner), doué d'un humour exceptionnel (« un étudiant, c'est quelqu'un qui *é-tu-die* ! »), il restera dans le souvenir de ses collègues et de ses étudiants comme un dialecticien redoutable.

Ce doyen d'une Faculté de l'Université de Montréal présidera une Commission provinciale d'enquête sur l'agronomie (1958-61) qui recommandera que son Université se départisse de sa propre Faculté d'agronomie. Ce théologien sera membre de la Commission provinciale d'enquête sur la censure des films (1961), dont l'une des recommandations sera la suppression de cette censure !

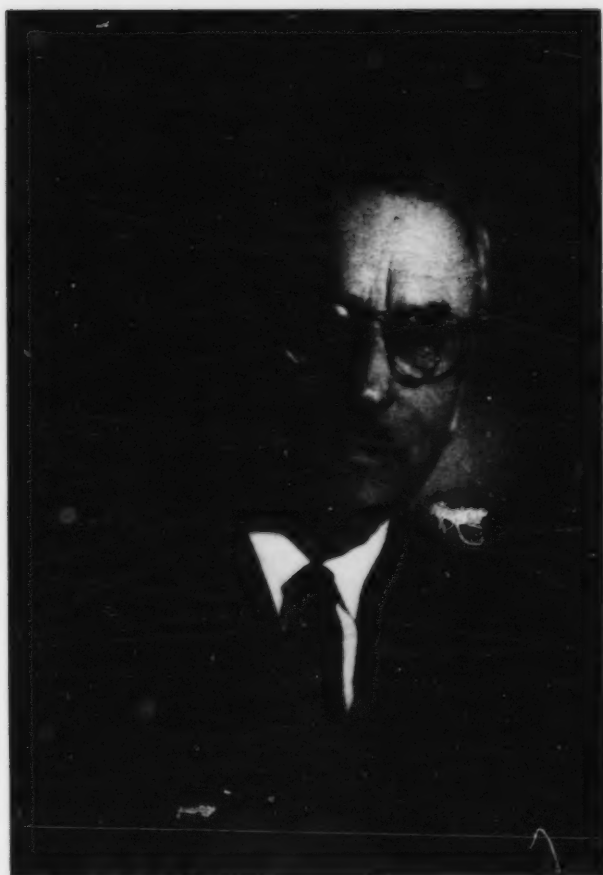
Les honneurs, qu'il n'avait pas recherchés, accompagneront sa brillante carrière : Maître en sacrée théologie (1955), Officier d'Académie (France, 1951), membre de la Société royale du Canada (1954), membre de l'Institut international de philosophie (1956), il recevra du Gouverneur général du Canada, en 1967, la médaille décernée « pour services éminents » et sera fait Compagnon de l'Ordre du Canada en 1971. Un an après sa retraite, l'Université de Montréal le nommera professeur émérite (1971).

Le P. Régis était d'une générosité de cœur exceptionnelle : on pouvait faire appel à lui dans les circonstances les plus difficiles, tout en étant assuré de sa délicatesse et de sa discrétion. Pour reprendre l'expression de l'un de ses confrères, c'était « un être de charité, la charité de l'intelligence. »

Grand humaniste et grand philosophe, le P. Régis laisse derrière lui une abondante production scientifique et le souvenir d'un homme exceptionnel ! Ses anciens étudiants et ses collègues lui gardent une profonde reconnaissance et une vive admiration.

I.B. McDIARMID, F.R.S.C.

Donald Charles Rose
1901–1988



TRANSACTIONS OF THE ROYAL SOCIETY OF CANADA / SERIES V / VOLUME IV / 1989



DONALD CHARLES ROSE died on 2 August, 1988, in Brockville, Ontario, after a short illness. He was in his eighty-eighth year.

Born in Prescott, Ontario, on 17 April, 1901, the son of Charles and Jean (Shilington) Rose, Donald Rose received his early education in eastern Ontario and later attended Queen's University, Kingston, where he obtained B.Sc. (1923) and M.Sc. (1924) degrees in Engineering Physics. In 1925 he was awarded an Exhibition of 1851 Overseas Scholarship, which he held at the Cavendish Laboratory, Cambridge University, where he worked under Sir Ernest Rutherford. He participated in some of the early experiments on the scattering of alpha particles by nuclei and received his Ph.D. degree in 1927. The following year he spent at the Wills Physical Laboratory, University of Bristol, on an Exhibition of 1851 Senior Studentship.

In 1929 Don Rose returned to Canada and married Louise Sandford. In the same year he was appointed to the position of Lecturer at Queen's University, but discovered that his real interest lay in research rather than teaching. The following year he was appointed an Assistant Research Physicist in the recently established laboratories of the National Research Council (NRC) in Ottawa, being one of the first group of young scientists to be appointed by the Council.

Don's early work in the Physics Division of the NRC was devoted largely to solving problems referred to the Division from outside the Council and for which his engineering background from Queen's made him particularly well suited. For some time he was the sole member of the General Physics Section of the Division and was expected to solve problems related to such things as variations in grain-grading techniques, electrical methods of killing chickens, electrical discharges in aerial cameras, and vibrations in aircraft. While some of these assignments allowed him to develop new instrumentation, work which he enjoyed doing and for which he had a remarkable talent, his main scientific interest was in more basic types of research, and during this period he found time to carry out and publish several studies on the electrical properties of the atmosphere. In fact, by 1934 he had published seventeen papers on a wide range of topics.

In the mid-thirties Don met General McNaughton who was then Chief of the General Staff at Defence Headquarters, and who was interested in developing techniques to measure accurately the velocity of projectiles. This meeting was to result in a major change in the direction of Don's work which would carry through until after the end of World War II.

Shortly after the meeting with McNaughton, Don set up a ballistics laboratory in the basement of the new NRC building on Sussex Drive in Ottawa. This was the first in a series of events that led to the General Physics Section, and Don in particular, playing a major role in military research during the war.

In 1943 Don was made Scientific Advisor to the Chief of the General Staff (Army) and seconded to the Department of National Defence where, in addition to his advisory role, he was responsible for an Operational Research Group. In 1945 he was transferred to the Department of National Defence and appointed

Chief Superintendent, Canadian Armament Research and Development Establishment, Valcartier, Quebec. During his two and one-half years at Valcartier his broad knowledge of science and his keen interest in technical matters resulted in the implementation of several novel projects, including the development of the first Canadian rocket, the Velvet Glove.

In 1948 Don faced a difficult decision, whether to remain with the Department of Defence or to return to the NRC. He chose the latter and was appointed a Principal Research Officer in the Division of Physics and given the freedom to choose his field of research. Over the next several years he built up an active group in Cosmic Ray Physics, the first such group in Canada. Again his considerable talents were put to use in the development of new instrumentation for measuring the intensity, energy, and direction of cosmic ray particles. In 1949 continuous monitoring of cosmic rays was started at Ottawa and Resolute Bay in northern Canada, and in the same year a sudden cosmic ray increase following a solar flare was recorded. Monitors were also installed at Fort Churchill, Manitoba, and on Sulphur Mountain, Alberta, so that variations related to both latitude and altitude could be studied. The latitude coverage was improved even further when in 1954 cosmic ray monitors were placed on board the ice-breaker H.M.C.S. *Labrador*, which sailed from Halifax through the Northwest Passage down the west coast to the Panama Canal and back to Halifax. Don was chief scientist on this voyage, only the fourth time a ship had sailed through the Passage.

In addition to his research on cosmic rays, much of Don's time, particularly after about 1956, went into the successful organization of two major research programs. One was Canadian participation in the International Geophysical Year (IGY) and the other was the initiation and organization of Space Research at the NRC and in Canadian universities. He also played an active role in many associations and committees, although only a few will be mentioned here: in 1949 he was President of the Canadian Association of Physicists; for many years he was Canadian representative on the Scientific and Technical Subcommittee of the United Nations Committee on the Peaceful Uses of Outer Space; he took an active part in the organization of COSPAR, an international Space committee, and served as Chairman of its finance committee until his retirement.

Don was an active promoter of the NRC Post-Doctorate Fellowship program and many Fellows were attracted to his group in Ottawa. New Fellows quickly felt at ease with him, partly because of his own modest approach to his work, and to life generally, and partly because of his obvious interest in their welfare. In a short time they felt very much at home and in many small ways Don acted like a father to them. He treated his staff, both professional and technical, in much the same way that he treated Fellows; it would be difficult to imagine a more pleasant laboratory atmosphere than the one he created.

In recognition of his scientific and organizational abilities, both during and after the war, he was appointed an Officer of the Order of the British Empire,

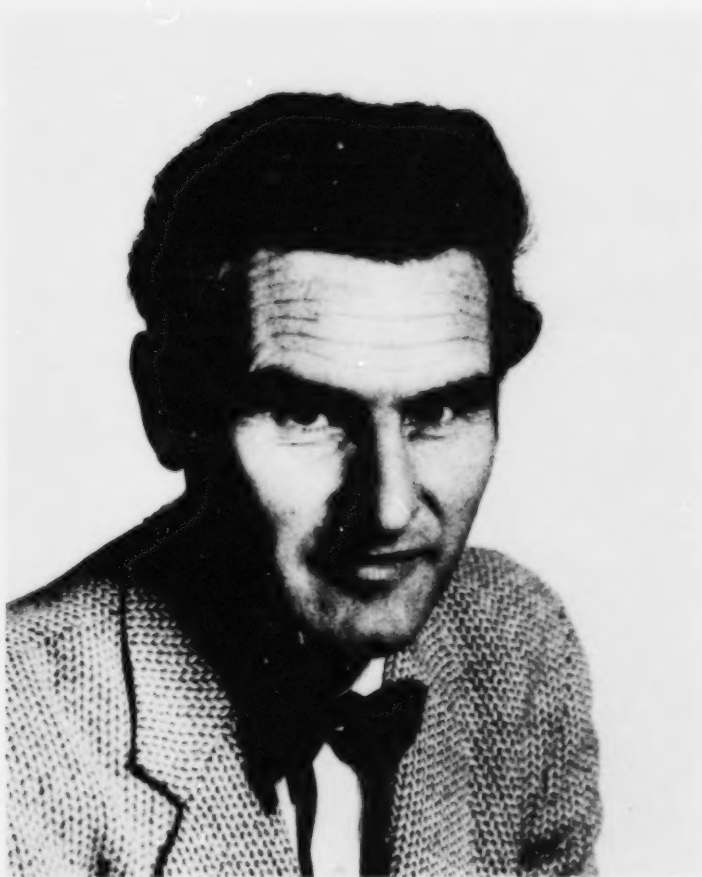
was elected a Fellow of the Royal Society of Canada, and received honorary degrees from a number of Canadian universities.

In 1966 Don officially retired from the NRC where he held the position of Associate Director, Division of Physics. Following the death of his wife, Louise, in 1967 he moved to Brockville, Ontario. In 1970 he married Caroline Findlay and enjoyed a quiet retirement at their home in Brockville. He is survived by his wife, Caroline, his sister Anna Findlay, and several nieces and nephews.



BRUCE G. TRIGGER, F.R.S.C.

Richard Frank Salisbury
1926–1989





THE DEATH of Richard Frank Salisbury, on 17 June, 1989, has robbed Canada of an anthropologist of international stature. Salisbury's brilliant mind, personal integrity, and life-long commitment to the study and resolution of social problems made him the embodiment of Harold Innis' ideal scholar. Students, colleagues, and the indigenous people he worked with will miss his boundless energy and creativity, which above all found their fulfilment in service to his fellow human beings.

Born in Chelsea, England, in 1926, Salisbury served with the Royal Marines and studied Modern Languages and Anthropology at Cambridge University before doing graduate work in Anthropology at Harvard and then the Australian National University. His research for the PH.D. was done in New Guinea on the economic change of highland peoples. He returned to Harvard to rework his material and to marry Mary Roseborough, a Canadian PH.D. student in the Department of Social Relations. After completing his doctoral degree in 1957 for the Australian National University, he taught at the University of California, Berkeley, and in 1962 came to McGill University. There he was the key figure in building the university's anthropology program, which became an independent department in 1970. While Salisbury continued to carry out research in New Guinea, he increasingly became involved in the social and economic development of the Canadian North. From 1969 to 1986 he headed the McGill Program in the Anthropology of Development, which became a major North American centre for applied anthropology.

From Stone to Steel (1962), the second of Salisbury's ten books and the one that established his international reputation as an economic anthropologist, analysed the social transformation taking place among the Siane people of the New Guinea highlands during the 1950s. In this book and *Vunamami* (1969), a study of economic development among the Tolai of New Britain, Salisbury showed the linkages between the dynamic potential of traditional societies and long-term social development. The economic and social analyses that he carried out in New Guinea, and later among the James Bay Cree of Quebec, were based on his conviction that indigenous communities must play an active role in the planning and implementation of social change if that change is to be successful. Salisbury maintained that anthropological studies should not be the private property of the academic community, nor of the governments and agencies that sponsored such research. Studies by anthropologists should be carried out with the informed consent of the people being studied and their results and conclusions made available to the people themselves in forms understandable to all. These ideas, which were revolutionary in the 1960s, have played a major role in adapting anthropology to a post-colonial international order and to a multicultural Canadian society.

More specifically, Salisbury maintained the need to decentralize decision-making in order to ensure the autonomy of local and regional peoples. From 1971 to 1983 he worked closely with the James Bay Cree, often acting as an intermediary between them and the Quebec government. Unlike some of his

colleagues, he rejected a confrontational role for anthropologists, stressing instead the need to encourage the mutually satisfactory resolution of conflicts by promoting a clearer understanding by all parties of the issues involved. The style of dialogue that he initiated between developers and indigenous peoples now serves as a model for planning in many parts of the world. In his most recent book, *A Homeland for the Cree* (1986), he expressed satisfaction that the Cree in Quebec had been able to mobilize knowledge, energy, and pride to pursue their own goals within a broader national framework. What he did not emphasize was the important role that he had played in supplying the technical knowledge that helped the Cree people make informed decisions about the kind of future they wished for themselves and later generations.

In addition to his well-known work in New Guinea and among the Cree, Salisbury studied problems as diverse as the nature of custodial care in mental hospitals, the organization of mining towns in Guyana, the impact of Anik-transmitted television among indigenous peoples in the North, and factors affecting the adaptation of Quebecers forced to give up dairy farming.

The strength of Salisbury's applied anthropology lay in his conviction that such work was not merely an application of theoretical knowledge but a powerful means for refining and developing theory. He argued that anthropology could best pursue theoretical and applied objectives by pursuing both together. His own interests covered an unusually wide range of anthropological theory. He made significant contributions to economic anthropology, transactional analysis, game-theory, social linguistics, and cognitive anthropology. He was hoping, following retirement in 1992, to write a major study of applied anthropology, based on his experiences around the world. There is no doubt that this would have been the crowning achievement of his academic career.

At McGill, Salisbury directed twenty Ph.D. dissertations, as well as numerous M.A. theses. He was renowned for the unfailing support that he gave to his students, who now teach and carry out research around the world. The collaborative research that he did with many of his former students and the enduring affection all of them have for him are evidence of his success as a teacher. While Salisbury encouraged students to develop their own ideas, his example has inspired many young anthropologists to carry on his work.

Salisbury also gave unstintingly of his time to professional organizations and to federal and provincial government agencies. He contributed greatly to the institutional and professional development of anthropology, especially within Canada. These activities resulted in his being elected President of the Northeastern Anthropological Association, the Canadian Sociology and Anthropology Association, the American Ethnological Society, the Society for Economic Anthropology, and most recently the Society for Applied Anthropology in Canada. He also actively promoted the recognition of the value of applied anthropology among funding agencies, indigenous people's organizations, the private sector, and the public. Fluently bilingual, he was from 1977 to 1979 a member of the Commission d'Enquête sur les Universités Québécoises and

from 1979 to 1984 he was a council member of L'Institut Québécois de Recherche sur la Culture. From 1981 he was a Board Member of the Canadian Human Rights Foundation. He served as Dean of Arts at McGill from 1986 until January 1989, when his illness made it impossible for him to continue. As Dean, he challenged his colleagues, many dispirited by years of severe budgetary constraints, to define realistic goals for the Faculty and to assume greater responsibility for realizing them. He was elected a Fellow of the Royal Society of Canada in 1974 and served as Honorary Secretary of Academy II from 1977 to 1980.

In addition to his many professional commitments, he enjoyed a happy family life with his wife, Mary, who teaches sociology at Marianopolis College in Montreal, two sons, Thomas and John, a daughter, Catherine, and three grandchildren. This life was focused on his home in Westmount and a farm in the Eastern Townships.

So great has been Salisbury's influence that it is hard to imagine Canadian anthropology without him. In his dealings with students and colleagues Salisbury was careful to practise his belief that no scholar had the right to force his or her ideas on anyone else. Yet his example of unremitting labour, intellectual honesty, and generosity challenged all who knew him to work harder, produce more, and discover inner talents that otherwise might have gone to waste. Few scholars have a record of enduring social and academic contributions to rival those that Salisbury made to his adopted country.



ALEXANDER G. MCKAY, F.R.S.C.

Edward Togo Salmon
1905–1988



TRANSACTIONS OF THE ROYAL SOCIETY OF CANADA / SERIES V / VOLUME IV / 1989



EDWARD TOGO SALMON, Canada's most distinguished Roman historian, a skilful university administrator and outspoken champion of the classics and of liberal education, died on 11 May, 1988, in Hamilton, Ontario.

Togo, as he was known to his friends and associates, was born in England on 27 May, 1905—the day that the Russian fleet was defeated in Tsushima Strait by Admiral Togo Heihachiro, hence the distinctive name. His family soon transferred to Australia, and Togo earned his B.A. in Classics and English at Sydney University; he moved to England for graduate work, receiving his doctorate in Classics at Cambridge University in 1933. He emigrated to a teaching post at Acadia University in 1929, thence to McMaster University, newly removed from Bloor Street, Toronto, to the wilds of Westdale, Hamilton. He remained at McMaster until his retirement in 1973 and served both Classics and History (as Messecar Professor) during his long career of commitment to the University. He worked steadfastly and effectively as senator and governor, as Principal of University College (1961–66), and as First Vice-President (Arts) (1967–68).

For Togo, research and writing were central to the task and to the art of teaching, and his career was a shining embodiment of all three. His example of rigorous, lucid, and relevant teaching was a paradigm for others. His enthusiasm for the ancient world, particularly for the peoples of ancient Italy, and for Caesar Augustus, was perennial and infectious. At home, and in the university circuit, sound and benign counsel came easily from his lips for persons and institutions that he respected and cherished; finally patriarchal and burnished by experience, it was always self-effacing and apologetic in style.

Togo attended meetings to make a meaningful contribution. The Royal Society of Canada and his colleagues in the Humanities and Social Sciences profited mightily by his years of service as Secretary and as President of his Academy. The Society honoured him with its Chauveau Medal in 1976. His administrative strengths extended into many areas; he helped to spark and organize the Classical Association of Canada (1945) and served as its President from 1952 to 1956. He was a zealous advocate for the establishment of the Canadian Academic Centre in Italy (1978). On the international front, he served as President of the prestigious American Philological Association in 1971, was Vice-President of the Conseil Internationale de la Philosophie et des Sciences humaines (CIPSH) from 1971 to 1974, and delegate to the Union Académique Internationale for a quadrennium; the last two organizations combine the experience and the luminaries of international classical and humanistic studies. Stanford named him its Professor-in-charge at the Intercollegiate Center for Classical Studies in Rome from 1969 to 1972.

Togo loved Italy; hardly a year passed without some foray, brief or extended, into the mountainous strongholds of Samnium or Apulia, or into the congenial company of fellow scholars and investigators at the American Academy and at the British School in Rome. His most celebrated study, *Samnium and the Samnites*, appeared in 1967, replete with marvelous new insights into that

shadowy people of central Italy. It won the coveted Merit Award of the American Philological Association (1971). One reviewer commented, "the long labours that have gone into the book have had their effect on the author—indeed, Professor Salmon has almost changed into a Samnite himself." Togo always remained sensitive to continuing patterns of life and conduct between antiquity and modern times, particularly in Italy's hill towns, and he was able to discern and reconstruct realities where others had failed abysmally or simply confessed defeat. To signalize their respect and admiration for his appraisal of their chequered past, the town of Boiano (ancient Bovianum) in Samnium celebrated the Italian translation of his Samnite study with a grant of honorary citizenship in their community in 1985; it was an honour that Togo cherished for the rest of his life. The Samnite peasants and warriors never knew such a champion as they found in Canada's Togo Salmon.

His other studies, *Roman Colonization under the Republic* (1969), *The Nemesis of Empire* (1974), and *The Making of Roman Italy* (1982), are monuments as durable as the University which he served and helped to design so gallantly over the years. Togo Salmon Hall abides as token of the University's esteem.

Togo's *Nunc Dimittis, Ex Italia Semper Aliquid Novi* (Something New Always Out of Italy), was proudly presented by an admiring colleague at the Annual Meeting of the Classical Association of Canada in Windsor on 28 May, 1988; it was a vigorous, lively account of new finds and new prospects in the territory he knew best, the evocative lands of the Hirpini and Messapi.

Honours and celebrations gladdened his years of retirement: *inter alia*, a *Festschrift* (1974), a "Togofest" (1985), and a Colloquium to mark his eightieth year. The American Society of Ancient Historians signalized his contributions to their discipline with a special encomium at its annual meeting of 1985. A galaxy of doctorates from Acadia, Wilfrid Laurier, McMaster, Windsor, Alberta, and Sydney, Fellowship in the Royal Society of Canada (1954) and in the Royal Historical Society (1971), and a Corresponding Fellowship in The British Academy, all reflected the esteem that his colleagues, near and far, held for him.

Versatility in scholarship and administration, relentless stamina, devotion to high principles in scholarship and in human relations, a sense of humour that was never diminished, fidelity to friends and to institutions, these were his paramount virtues. They were also his hallmark. To his friends, to colleagues, and to a relentless and admiring host of students, nothing that would help was ever too much trouble; he was as ingenious in his kindnesses as he was grateful for acts of kindness directed towards himself. Horace of Venusia provides an apt epitaph:

quis desiderio sit pudor aut modus / tam cari capitis?

WILFRED CANTWELL SMITH, F.R.S.C.

Robert Balgarnie Young Scott
1899–1987



TRANSACTIONS OF THE ROYAL SOCIETY OF CANADA / SERIES V / VOLUME IV / 1989



ROBERT BALGARNIE YOUNG SCOTT, or "R.B.Y." as he was affectionately known among colleagues and friends, was a member of the Royal Society because of his pre-eminence as a scholar, in the field of classical Hebrew and Biblical studies. His contribution in other related areas was also of high distinction—ranging from the cause of social justice in Canada, particularly during the Depression years, to Christian devotional life. One may note first his role as a recognized leader in Old Testament research, and as a constructive promoter of scholarly work in that field and in the academic study of religion generally.

Born in Toronto, a "son of the manse," he graduated in Oriental Languages at the University of Toronto (B.A., M.A., PH.D.) and in Theology from Knox College (B.D.). After two years in the parish ministry he took up an academic post in 1928 at Union College, Vancouver, and a few years later became Professor of Old Testament Language & Literature—later also Registrar and Dean of Residence—at United Theological College in Montreal; it was from there that his scholarly reputation spread throughout Canada as an innovative and forceful interpreter of the Bible. When McGill University established a Faculty of Divinity in 1948, he served as its Dean for the inaugural year, and for several years as McGill's Professor of Old Testament. Meanwhile his reputation was growing internationally, and in 1955 he accepted the position of Danforth Professor of Religion at Princeton University—one of the first secular institutions on this continent to set up in its Faculty of Arts & Sciences a department for the academic study of religion as a component of the liberal arts curriculum, a trend that has grown strikingly in recent decades in both the United States and Canada. He continued at Princeton until his retirement from active academic life (1968), having helped to organize Princeton's doctoral programme and serving as Chairman of the Department, 1963–65.

Vigorously before, though also after his move to the United States, he was centrally involved in developments in Canada in his field. He was a founder of the Canadian Society of Biblical Studies, which soon secured an honoured place among the Learned Societies of this country. In 1951, during his time on an archaeological expedition in the Near East, he played a substantial role in acquiring for McGill significant fragments of the then emerging Dead Sea Scrolls. His important book on these Scrolls helped to introduce them to the English-speaking world.

His scholarly output is impressive. He did meticulous work on details, and also was important for his integrating of these into a broad perspective. The former point is illustrated, from among many other instances that might be mentioned, by his specialized ferreting out of precise meanings for particular terms in the Hebrew Bible relating to weather, research that brought him into close contact and friendship with leading meteorologists in Canada, and enabled him to reconstruct weather patterns in ancient Palestine in quite new ways. He also brought new precision to our understanding of weights and measures used in that land. The second point has to do with his correlating of

close exact knowledge of old texts with large intellectual movements, both academic and of general social import, both classical and modern. It too could be illustrated from several instances. One could cite his book, widely influential in Canadian life in the latter 1930s, *Towards the Christian Revolution*, of which he was co-author and co-editor, or his later *The Relevance of the Prophets* (1944), relating the preaching of the Old Testament prophets to the social situation of their own day and to our situation at the time. One could cite his leadership in the important movement in Biblical study since World War II involving a new understanding of and emphasis upon the sector of the Old Testament dubbed "Wisdom Literature." Here he produced, for example, on Proverbs and Ecclesiastes (1965), the new translation and verse-by-verse commentary with erudite notes that appeared as Volume 18 in the series *The Anchor Bible*, which did much to help steer recent Biblical scholarship in its new directions. His annotations include illuminating references to ancient Phoenician and Egyptian forerunners and parallels. On the other hand he published a few years later (1971) *The Way of Wisdom*, which might, in line with his earlier major work, be seen as a presentation on "The Relevance of the Biblical Wisdom-Writers," elucidating and analysing this genre's distinctive, more humanistic, outlook, in relation again both to its own historical background and context and to ours. And so on. His careful journal articles of technical research, and his general while learned books, both testify to the originality, scope, and significance of his scholarly activity.

This scholarly activity, sustained over several decades, was supplemented, as we have remarked, by contributions to social activism (he was, to give one instance, first Chairman of the Fellowship for a Christian Social Order, a major movement in the thirties in Canada) and to the inner devotional life of the Church, where also he has left a rich legacy. Again to cite an illustrative example, Anglican and United Church of Canada congregations have sung and continue to sing hymns from his pen, included in their hymn book and prized by many. In fact his hymns appear in upwards of twenty hymn books around the world, including translated versions in French and German collections.

All this is quite apart from what he personally offered to family, friends, and colleagues, warmly cherished.

G.F.D. DUFF, F.R.S.C.

Marvin Shinbrot
1928–1987





MARVIN SHINBROT was born on 30 May, 1928, in Brooklyn, New York, the son of Meyer Shinbrot and Sylvia Shinbrot Goldberg. He attended school in Brooklyn until, at age thirteen, he decided to enter the Fort Union Military Academy, Virginia, as a result of contacts with students there during family vacations in Florida. He graduated from this academy with the rank of lieutenant, in retrospect an ironic contrast to his antimilitaristic activities in later life.

His mathematical talent was evident during his early years, and he went on to Syracuse University as an undergraduate student. Here he met and married his first wife, Elaine, whose active political interests influenced him in later years. Two sons, Adam and Troy, and a daughter, Mia, were born of this marriage. In 1949 he began to work for the National Advisory Committee for Aeronautics at Moffett Field, California. While working for NACA during 1949-57 he began to study linear systems theory and integral equations. From 1957 to 1961 he worked for the Lockheed Aircraft Corporation as a research scientist with top secret status.

Becoming dissatisfied with military applications of mathematics, he resumed graduate work at Stanford and rapidly obtained his PH.D. in 1960 with a thesis on "Difference kernels," a topic of his own choice.

After two years as instructor at the University of Chicago he returned to California as Assistant Professor at Berkeley. During the years 1962-65 there, he and his wife became actively engaged in the civil rights movement and opposed the Vietnam War. However these were also productive years for his research in Wiener-Hopf factorization, the theory of water waves and the Navier Stokes equations. He also began several of his many collaborations with others at this time, notably with S. Kaniel and A. Friedman.

In 1965 he became Associate Professor of Mathematics and Engineering Sciences at Northwestern University, and was promoted to Professor in 1967. Both his scientific output and his political and social commitment continued to grow during these years. Marvin Shinbrot could, and did, speak out for his convictions even at the cost of his own interests, his position and his family life. He became a faculty advisor for the "Students for a Democratic Society," personally handed out flyers protesting against the Vietnam War and civil rights violations, and spoke out against the rôle of Northwestern University as a slumlord. All this made enemies for him in the university. He was one of those gassed by police during a demonstration and riot at the Democratic National convention in 1968. His family was then harassed by bomb threats and rocks thrown through their windows. Shortly after, his marriage broke up.

It was in these circumstances that he moved to Canada in 1970, first as visiting professor at the University of British Columbia, and shortly after at the University of Victoria and then the University of Toronto. Here he continued to work vigorously on a range of topics. He also visited Oxford in these years.

Settling down again in 1974 with a permanent position at Victoria, he began a new period of research on the kinetic theory of gases and the Boltzmann

equation. These fundamental studies of the foundations of fluid mechanics led to important collaborations with J. Schnutte, S. Kaniel, and later, R. Illner. Parallel to this interest ran his continuing work on water waves, in part with J. Reeder and others, which later came to include studies of capillarity and water drops.

During this period Marvin Shinbrot was married again, to Sarah Cline, who is a Professor of History specializing in the Aztec and Amerindian sixteenth century. To be with her he spent several visiting periods at the Centre des Recherches Mathématiques of the University of Montreal, then at Harvard and later at the University of California, Santa Barbara. His mathematical work had now brought him many contacts abroad, and he regularly visited Germany, Italy and Israel, as well as Mexico. With this active and varied life, Marvin Shinbrot reached what appeared to be a stable and satisfying regime. His interesting, forceful, and strongly original papers made their appearance regularly; he had achieved a plateau of continued accomplishments. He was elected Fellow of the Royal Society of Canada in 1979, an honour he greatly cherished. In all, he wrote more than seventy research papers, several of which were still to appear at the time of his death. A skilful expositor, he also enjoyed writing for the interested public in such journals as *Scientific American*.

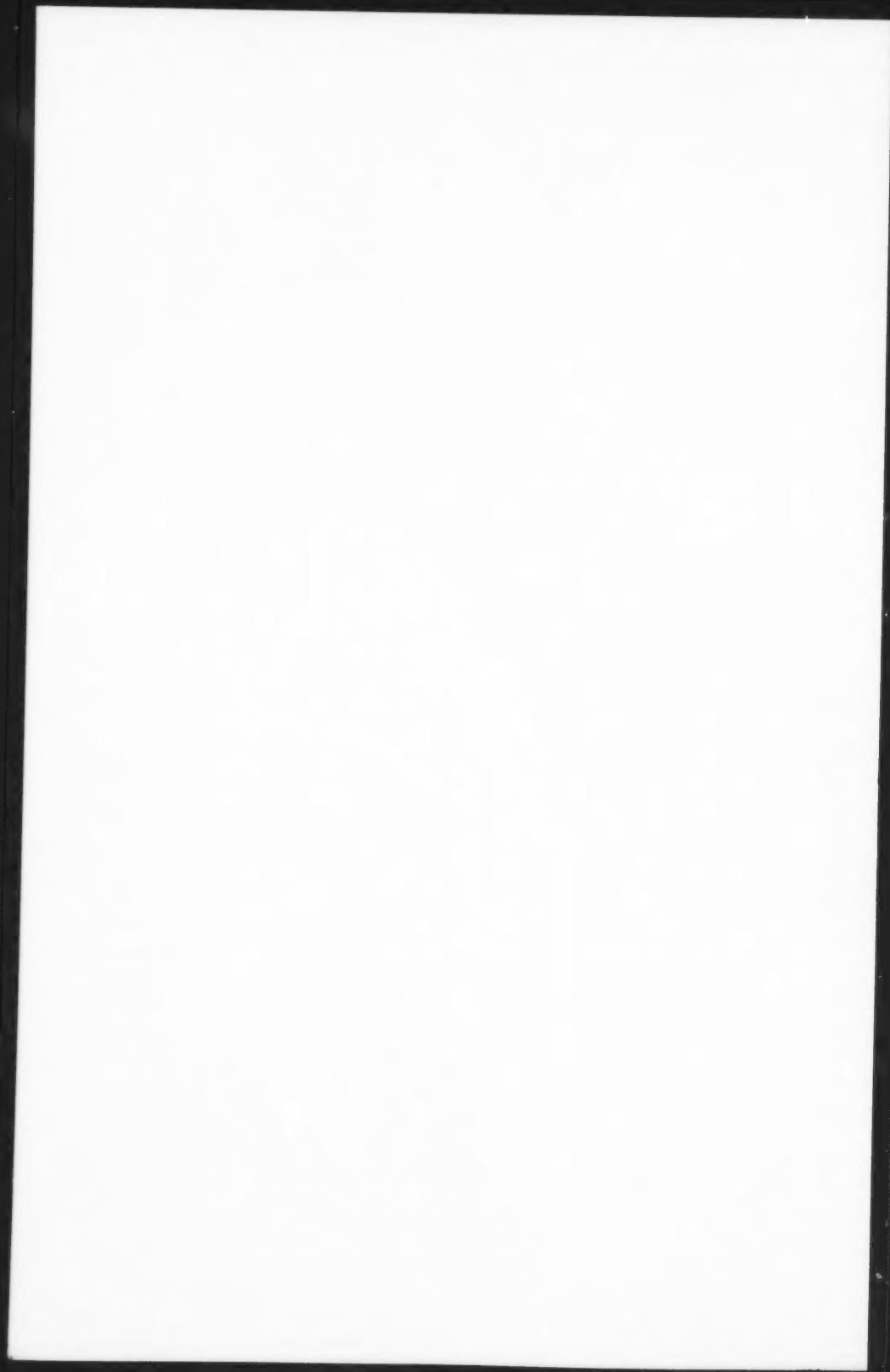
The year 1987 was to prove his *annus climacticus*. In March, a daughter, Xoco, was born. But unknown to his friends Marvin Shinbrot was now found to be suffering from cancer and an incidental operation became necessary. Complications ensued and he then fell victim to an embolism, dying suddenly on 18 September, 1987.

Marvin Shinbrot was a man of thoughtful independence and originality, which showed both in his work and in the events of his life. His character was such that everyone hearing his views would take notice of them, whether favourably or not. From a relatively conventional outlook as a young man he developed an extremely well informed and penetrating critical view of his native country's policies and gave utterance to his convictions. His many friends and admirers may well be glad that in Canada he found a haven from the consequences of these actions and that this last period saw his most sustained achievements in research.

A. KIRK GRAYSON, F.R.S.C.

Frederick V. Winnett
1903–1989





FREDERICK V. WINNETT was a human being of unusual attainment both in scholarly research and in personal relations. His dedication to original inquiry in pre-Islamic Arabian inscriptions led him to travel extensively in Arabia, into areas few westerners have ever penetrated. As dedicated as he was to research, he also set a high value on human companionship, be it with colleagues, friends, or family. He gained the warmest regard from the many who came into contact with him because of his honesty, modesty, and genuine warmth. He never boasted of his achievements although he, more than many, had every right to do so.

Fred Winnett was born in Oil Springs, Ontario on 25 May, 1903. He studied Oriental Languages at University College, University of Toronto, receiving his B.A. in 1923 and M.A. in 1924. During 1923-27 he studied at Knox Theological College and in 1928 he received the PH.D. from the University of Toronto. Thereafter he undertook post-graduate studies at Hartford Theological Seminary.

In 1928 he married Margaret Johnston Taylor, the daughter of missionaries in central India where Margaret had been brought up. From this union sprang two children—a son, William, and a daughter, Marilyn. In later years there were several grandchildren to whom Fred Winnett was devoted.

In 1928 Fred Winnett was appointed to the Department of Oriental Languages in University College, University of Toronto, and eventually he became Professor and Head of this Department. During 1966-69 he was Vice-Principal of University College and for two terms (1950-51 and 1958-59) Director of the American Schools of Oriental Research, Jerusalem, Jordan. A founding member of the Canadian Society of Biblical Studies, he became President in 1949. He was elected a Fellow of the Royal Society of Canada in 1959, and President of the Society of Biblical Literature (United States) for 1964.

The research of Professor Winnett could hardly have been more original in that he was one of the few westerners ever allowed into Saudi Arabia to conduct scholarly research. His pioneering instincts are reflected in his being the first scholar to conduct systematic epigraphical surveys in that country during 1962 and 1967. He was able to persuade the giant oil company, Aramco, to provide him with the necessary logistic support in these expeditions and the result was an invaluable collection of photographs of inscriptions, which became the basis of his research on pre-Islamic North Arabian inscriptions (Lihyanite and Thamudic). Fred Winnett had already laid the foundations for his research in this speciality through two publications, *A Study of the Lihyanite and Thamudic Inscriptions* (1937) and *Safaitic Inscriptions from Jordan* (1957). After his Arabian expeditions he mined his treasure of photographs to produce *The Ancient Records from North Arabia* (with William Reed, 1970) and *Inscriptions from Fifty Safaitic Cairns* (with G.L. Harding, 1978). In sum, his research in this area made him one of the four great scholars to whom we owe virtually everything we know about North Arabian epigraphy. He was a giant in his field.

Anyone who knew Fred Winnett at all was well aware of his dedication to

learning and research. Even his children have commented that his study light was never out before midnight. I visited Fred Winnett for the last time three weeks before his death and found him, at the age of eighty-five, still working in his study on his photographs of inscriptions from Arabia. The one disappointment that he had was that after his retirement no one was appointed in his field to carry on this valuable research.

Fred Winnett was more than a researcher, however, he was a teacher, an administrator, and a wonderful colleague for many of us. In all of these spheres one of his most outstanding characteristics was that he was always firm but fair. Once he made a decision you could be sure that he had thought carefully about it, weighing all sides to be as fair as possible to everyone, and he would stand by that decision. Although his first professional interest was always research, he was extremely conscientious in carrying out his other duties in teaching and administration. He was just as concerned about human relations, however, and always took time for social contacts with colleagues and students alike. He and his wife, Margaret, regularly entertained students and colleagues in their home, these evenings being characterized by friendly graciousness.

Throughout his life, as busy as it was professionally, he always had plenty of time to devote to his family and when possible he took them with him on his trips to the Near East. In later years when his wife Margaret became extremely ill, he dedicated himself to caring for her, to the exclusion of most other interests, until her death.

Fred Winnett's early travels to Arabia led him beyond his research interests to become identified with the people and their problems. He was concerned with the distortions found in the western media and western minds in general about Arabs and Arabia and became quite outspoken about the plight of the Palestinian Arabs. A good example is the period when the Dead Sea Scrolls were being discovered and Fred Winnett was involved in the authentication of some of the scrolls and arranging their purchase. He spoke to me one day, when I was his student, about the time and the difficulties it involved. He commented that the Bedouin were cutting the scrolls up into small pieces in order to sell each piece at a price which collectively would be higher than the price an individual scroll could bring. After deploring this from a scholarly point of view he added to me quietly "those poor devils, they deserve everything they can get." This passionate concern eventually involved him in public debate on the question of the Palestinian refugees and an article he wrote in *Macleans* in the 1950s put his name at the fore of this controversy. He reluctantly withdrew from public discussion when his wife and family began to receive threatening phone calls.

The dedication of Fred Winnett to scholarship, his family, friends and colleagues, and to causes in which he believed, and his life and work in general have been an inspiration to many of us. He died in Toronto on 22 January, 1989, but his memory will continue to be an inspiration to all of us who knew him.

Appendix



Appendix:

Publications of the Royal Society of Canada Publications de la Société royale du Canada

The Royal Society of Canada publishes:

- Minutes of its *Proceedings* at the Annual Meeting;
- an annual volume of the Society's *Transactions*;
- Proceedings of Symposia;
- *Calendar of Fellows*;
- *Report of Council*;
- *Corporate Plan*.

La Société royale du Canada publie :

- les *Délibérations* du Congrès annuel de la Société ;
- les *Mémoires* présentées au Congrès annuel de la Société ;
- les Comptes rendus des colloques ;
- l'*Annuaire* des membres;
- le *Rapport du Conseil*;
- le *Plan d'ensemble*.

A summary statement on *The Royal Society of Canada 1882-1982* is available without charge from the Secretariat.

On peut se procurer gratuitement au Secrétariat un exposé sommaire sur *La Société royale du Canada 1882-1982*.

Proceedings and Transactions

The *Proceedings* and the *Transactions* appear annually in two separate volumes.

Fellows receive copies of the current issues without charge. For current issues the prices to non-Fellows are \$6.75 for *Proceedings* and \$13.50 for *Transactions*. Some earlier volumes are available for purchase at prices depending on scarcity and condition. Inquiries and orders should be sent to the Royal Society of Canada.

Délibérations et Mémoires

Les *Délibérations* et les *Mémoires* paraissent chaque année en deux volumes distincts qui sont distribués gratuitement aux membres. Le grand public peut acheter les der-

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nières livraisons des *Délibérations* à 6,75 \$ l'exemplaire et les *Mémoires* à 13,50 \$. Il est encore possible de commander certains volumes antérieurs, le prix dépendant de l'état de la publication et du nombre d'exemplaires disponibles. Prière d'adresser toutes demandes de renseignements ou toutes commandes à la Société royale du Canada.

Index 1882-1982

The Index consists of author and subject entries for all papers published in the *Transactions* and other publications of the Society. Available for \$30.

L'Index auteurs-matières renvoie ainsi à toutes les communications des *Mémoires* et d'autres publications de la Société. Prix : 30,00 \$.

Studia Varia

The scope of these volumes is indicated by the titles. Most volumes are now out of print. Asterisks (*) indicate those volumes that are available through the Royal Society; all others continue to be available through the on-demand publishing program of University Microfilms, Ann Arbor, Michigan, U.S.A.

Le titre des volumes déjà parus indique la portée de ces études. La plupart de ces volumes sont épuisés. Les astérisques (*) indiquent les volumes disponibles au Secrétariat de la Société. On peut se procurer les autres volumes en s'adressant à University Microfilms, Ann Arbor, Michigan, U.S.A.

Studia Varia, E.G.D. Murray, ed., 1957, 136 pp.

Our Debt to the Future, E.G.D. Murray, ed., 1958, 142 pp.

The Canadian Northwest: Its Potentialities, Frank H. Underhill, ed., 1959, 112 pp.

Evolution: Its Science and Doctrine, T.W.M. Cameron, ed., 1960, 254 pp.

Aux sources du présent, Léon Lortie et Adrien Plouffe, eds., 1960, 122 pp.

Canadian Universities Today, George F.G. Stanley and Guy Sylvestre, eds., 1961, 108 pp.

**Canadian Population and Northern Colonization*, V.W. Bladen, ed., 1962, 168 pp., \$4.50.

Higher Education in a Changing Canada, J.E. Hodgetts, ed., 1966

Pioneers of Canadian Science, G.F.G. Stanley, ed., 1966

Structures sociales du Canada français, Guy Sylvestre, éd., 1966

**Water Resources of Canada / Ressources hydrauliques*, C.E. Dolman, ed., 1967, 249 pp., \$8.50.

Scholarship in Canada 1967: Achievement and Outlook, R.H. Hubbard, ed., 1967

**Visages de la civilisation au Canada Français*, L. Lamontagne, éd., 1970. SBN 8020-1659-6. pp. 130, \$7.50.

**Le Canada français d'aujourd'hui*, L. Lamontagne, éd., 1970. SBN 8020-1658-8. pp. 161, \$7.50.

Special Publications / Publications spéciales

Collections of specialized scientific papers on a single theme or related themes have been published for the Society from time to time. Most volumes are now out-of-print. Asterisks (*) indicate those volumes available through the Secretariat of the Society; all others continue to be available through the on-demand publishing program of University Microfilms, Ann Arbor, Michigan, U.S.A.

On a publié de temps en temps, pour le compte de la Société, des collections d'ouvrages portant sur un thème unique ou sur des questions connexes. La plupart de ces

volumes sont épuisés. Les astérisques (*) indiquent les volumes disponibles au Secrétariat de la Société. Les autres volumes sont disponibles sur demand à University Microfilms, Ann Arbor, Michigan, U.S.A.

The Grenville Problem, James E. Thompson, ed., 1956

The Proterozoic in Canada, James E. Gill, ed., 1957

**Soils in Canada*, Robert F. Legget, ed., 1961, water damaged copies. ISBN 0-8020-1351-1. 240 pp., \$5.50

Tectonics of the Canadian Shield, J.S. Stevenson, ed., 1962

**Marine Distribution*, M.J. Dunbar, ed., 1963, 110 pp., \$5.00

**Studies in Analytical Geochemistry*, Denis M. Shaw, ed., 1963, 139 pp., \$5.95

Crucial Maps in the Early Cartography and Place-Nomenclature of the Atlantic Coast of Canada, with an Introductory Commentary and Map Notes by Theodore E.

Layng, W.F. Ganong, ed., 1964

**Geochronology in Canada*, F. Fitz Osborne, ed., 1964, 156 pp., \$5.95

Continental Drift, G.D. Garland, ed., 1968

**Appalachian Tectonics*, T.H. Clark, ed., 1967, 99 pp., \$6.50

**The Earth Sciences in Canada: A Centennial Appraisal and Forecast*, E.R.W. Neale, ed., 1968, 259 pp., SBN 8020 15239, \$8.50

**Glacial Till—An Interdisciplinary Study*, Robert F. Legget, ed., 1976, 412 pp., ISBN 0 920064 11 6, \$15.00

**Energy Flow—Its Biological Dimensions (The IBP in Canada 1964–1974)*, T.W.M. Cameron and L.W. Billingsley, eds., 1975, 322 pp., ISBN 0 920064 05 1, \$5.00

**Nuclear Issues in the Canadian Energy Context*, E.P. Hincks, ed., 1979, 279 pp., ISBN 0 920064 13 2, \$8.00

**Nuclear Winter and Associated Effects: A Canadian Appraisal of the Environmental Impact of Nuclear War / L'hiver nucléaire et ses effets connexes*, F.K. Hare and A. Forester, eds., 1985, 382 pp., ISBN 0 920064 21 3, \$15.00

Proceedings of Symposia / Comptes Rendus des colloques

These volumes comprise the papers presented at symposia held from time to time to deal with matters of scholarly and public importance. The contents in all cases are presented in English or French, depending on the language of the speaker. They are sold by the Secretariat of the Society unless indicated otherwise.

Ces volumes réunissent les communications présentées aux colloques tenus de temps en temps pour étudier des sujets importants dans les domaines d'intérêts public et du savoir. Elles paraissent, la plupart du temps, en anglais ou en français, selon la langue utilisée par le conférencier. On peut se les procurer au Secrétariat de la Société sauf les quelques cas indiqués.

1 *The Tundra Environment*, F. Kenneth Hare, ed., 1970, 54 pp., \$2.00

2 *Mercury in Man's Environment*, J.E. Watkin, ed., 1971, 201 pp., \$5.00

3 *Communications into the Home / Communications au foyer*, W.C. Brown, ed., 1972, 196 pp., \$3.00

4 *Futures Canada / L'avenir du Canada*, J.T. Wilson, ed., 1973, 71 pp., \$2.00

5 *Physics and Chemistry of Ice*, F. Whalley, S.J. Jones and L.W. Gold, eds., 1973, 403 pp., \$10.00 (Bound / relié)

6 *Energy Resources*, K.J. Laidler, ed., 1973, \$10.00

7 *Copernicus*, P. Wyczynski, ed., 1973, 164 pp. Sold by / Vendu par FIDES, \$8.00

8 *Waste Recycling and the Environment*, P. Reynolds, ed., 1974, 290 pp., \$7.00

9 *Le Rapport Parent, dix ans après*, L.-P. Audet, éd., 1975. Sold by / Vendu par La Maison Bellarmin. \$5.00

- 10 *Frontiers and Limitations of Knowledge / Frontières et limites du savoir*, C. Fortier, éd., 1975, \$4.00
- 11 *The Patterns of Amerindian Identity / Les facettes de l'identité amérindienne*, M.-A. Tremblay, éd., 1976. ISBN 0920064 04 3. Sold by / Vendu par Les Presses de l'Université Laval. \$13.50
- 12 *Problems of Development in Atlantic Canada*, S.D. Clark, ed., 1976, 181 pp. ISBN 0920064 01 9. \$5.00
- 13 *Preserving the Canadian Heritage / La préservation du patrimoine canadien*, K.J. Laidler, ed., 1975, 191 pp. ISBN 0920064 00 0. \$5.00
- 14 *The University of the Future (Summary of discussions) / L'université de l'avenir (résumé des discussions)*, Jan Morgan and K.J. Laidler, eds., 1975, 50 pp. (Free distribution / distribution gratuite)
- 15 *New Perspectives in Canadian Archaeology / Nouvelles perspectives de l'archéologie canadienne*, A.G. McKay, ed., 1976, 258 pp. ISBN 0920064 06 X. \$5.00
- 16 *Canada and World Food*, W.S. Henderson, ed., 1977, 302 pp. ISBN 0920064 07 8. Sold by / Vendu par Agricultural Institute of Canada. \$8.00
- 17 *Shifts in the Balance of Canada's Resource Endowments*, R.E. Folinsbee, ed., 1977, 118 pp. ISBN 0920064 10 8. \$4.00
- 18 *Parasites, Their World and Ours*, A.M. Fallis, ed., 1977, 262 pp. ISBN 0920064 08 6. \$7.00
- 19 *Planetary Atmospheres / Atmosphères des planètes*, A. Vallance Jones, ed., 1977, 170 pp. ISBN 0920064 09 4. \$6.00
- 20 *Hermes (The Communications Technology Satellite): Its Performance and Applications / Hermès (Le Satellite technologique de télécommunications) : son fonctionnement et ses applications*, I. Paghis, ed., 1978, 867 pp. ISBN 0 920064 12 4, 3 vols \$25.00
- 21 *Glacier Beds: The Ice-Rock Interface*, 1979, as Vol. 23, No. 89, 1979. Published and sold by / Publié et vendu par International Glaciological Society, Cambridge, CB2 3IER, England. 20
- 22 *The Written Word / Prestige de l'écrit*, A.G. McKay, ed., 1980, 165 pp. ISBN 0920064 14 0. \$7.00
- 23 *A Century of Canada's Arctic Islands, 1880-1980 / Un siècle des îles arctiques du Canada, 1880-1980*. Morris Zaslow, ed., 1980, 358 pp. ISBN 0 920064 15 9. \$20.00
- 24 *Continuité et rupture. Les sciences sociales au Québec*. Georges-Henri Lévesque et autres, eds., 1984. 2 volumes, 671 pp. ISBN 27606 0682 1. Sold by / Vendu par les Presses de l'Université de Montréal. \$36.00
- 25 *Ethanol from biomass*, H.E. Duckworth and E.A. Thompson, eds. 1983, 654 pp. ISBN 0 920064 17 5. \$20.00
- 26 *The Assessment and Perception of Risk to Human Health in Canada / L'évaluation de la perception des risques à la santé au Canada*, P.G. Hill and J.T. Rogers, eds., 1983, 275 pp. ISBN 0 920064 18 3. \$10.00
- 27 *Renewals in the Theory of Literary History / Renouvellements dans la théorie de l'histoire littéraire*, Eva Kushner, ed., 1983, 285 pp. ISBN 0920064 19 1. \$11.00
- 28 *The Information Economy: Its Implications for Canada's Industrial Strategy*, C.C. Gotlieb, ed., 1985, 400 pp. ISBN 0 920064 20 5. \$20.00
- 29 *Origin and Evolution of the Universe: Evidence for Design? / Origine et évolution de l'univers : traces d'intentionnalité ?* John M. Robson, ed. Sold by / vendu par McGill-Queen's Press, 1987. ISBN 0-7735-0617-9, cloth / couverture dure \$35.00; ISBN 0-7735-0618-7, paper / couverture molle \$15.95
- 30 *Symbols in Life and Art / Les Symboles dans la vie et dans l'art*, James A. Leith, ed., pp. 153. Sold by / vendu par McGill-Queen's Press, 1987. ISBN 0-7735-0616-0. \$35.00

- 31 *Towards an Effective Dialogue Between Parliamentarians and Scientists*, Summary Report, P.T. Hough, M.R. Dence, 1988, 14 pp.
- 32 *The Family in Crisis: A Population Crisis, / Crise de la famille : crise démographique ?*, Jacques Légaré, Roderic Beaujot et T.R. Balakrishnan, eds., 1989, 463 pp. ISBN 0-920064-26-4. \$20.00
- 33 *Science, Politics and the Public: Communicating the Issues / Les sciences, la politique et le public : savoir communiquer*, Paul Hough, ed., 1989.
- 34 *Equity, Fiduciaries and Trusts*, T.G. Youdan, ed., 438 pp. Sold by / vendu par Carswell Publications Co. Ltd., 1989. ISBN 0-459-32761-5.
- 35 *Diet, Nutrition and Health*, K.K. Carroll, ed., 288 pp. Sold by / vendu par McGill-Queen's University Press, 1990. ISBN 0-7735-0733-7 cloth \$37.50; ISBN 0-7735-0741-8 paper \$16.95.

The Society as Co-Publisher / La Société comme

The Brundtland Challenge and the Cost of Inaction, Alex Davidson and Michael Dence, eds., 1988, 192 pp. ISBN 0-88645-076-4 \$14.95 Available from / disponible de: The Institute for Research on Public Policy, P.O. Box 3670 South, Halifax, N.S. B3J 3K6.

L'Avenir des relations industrielles dans les Amériques, Actes du 1er Congrès des relations industrielles des Amériques / *The Future of Industrial Relations in the Americas*, Proceedings of the 1st Congress of Industrial Relations of the Americas. *Relations Industrielles / Industrial Relations*, Vol. 44, No. 1, 1989 ISSN 0034-379X Available from / disponible de : Les Presses de l'Université Laval, C.P. 2477, Québec (Québec) G1K 7R4.

Other Publications / Autres publications

Présentations

This publication contains the addresses of introduction by the sponsors of new Fellows in Académie I and the response by the respective Fellows in which they describe their work or deal with some other topic of their choosing.

Cette publication réunit les discours de présentation des nouveaux membres de l'Académie I par leurs parrains et les réponses de ces membres dans lesquelles ils traitent de leur oeuvre ou d'un autre sujet de leur choix.

Published annually. The volumes from the first in 1945-46 to the present, are all in stock. From 1945-46 (No. 1) to 1972-73 (No. 28) the price per copy is \$2.00. From 1973-74 (No. 29) to 1975-76 (No. 31) the price per copy is \$3.50. The years 1976-77 and 1977-78 (combined in No. 32) cost \$4.00. For 1978-79 (No. 33) and 1979-80 (No. 35) the price per copy is \$4.50. From 1980-81 (No. 36) to 1982-83 (No. 38) the price per copy is \$5.50. For 1983-85 (No. 39), 1985-86 (No. 40), and 1986-88 (No. 41), the price is \$6.00. The complete series costs \$80.00 (postage included).

Publiées chaque année. Tous les numéros du premier en 1945-46 à date sont disponibles. De 1945-46 (no. 1) à 1972-73 (no. 28) ils coûtent 2,00 \$ l'exemplaire. De 1973-74 (no. 29) à 1975-76 (no. 31) ils coûtent 3,50 \$ l'exemplaire. Ceux des années 1976-77 et 1977-78 (réunis dans le no. 32) coûtent 4,00 \$ l'exemplaire. Ceux des années 1978-79 (no. 33) et 1979-80 (no. 35) coûtent 4,50 \$ l'exemplaire. Ceux des années 1980-81 (no. 36) à 1982-83 (no. 38) coûtent 5,50 \$ l'exemplaire. Ceux des années 1983-85 (no. 39), 1985-86 (no. 40), et 1986-88 (no. 41) coûtent 6,00 \$ l'exemplaire. La série complète coûte 80,00 \$ (frais d'envoi compris).

Mathematical Reports of the Academy of Science / Comptes Rendus Mathématiques de l'Académie des Sciences :

The Society has lent its patronage to the *Mathematical Reports* compiled by an Editorial Committee drawn from Academy III and published six times annually. The *Reports* may be obtained by purchase or by exchange. Inquiries should be addressed to the Secretariat.

La Société patronne les *Comptes Rendus Mathématiques* qui sont compilés par un comité d'édition tiré des membres de l'Académie III. La brochure paraît six fois par année et on peut l'acheter ou se la procurer en échange. Prière de vous informer auprès du Secrétariat.

Reports on research carried out by the Society / Rapports des recherches effectuées par la Société :

Acid Deposition in North America, F.K. Hare, ed., 1983. Available from Environment Canada / S'adresser à Environnement Canada, Place Vincent Massey, 351 St. Joseph Blvd, Hull, Québec K1A 0H3.

Long-range Transport of Airborne Pollutants in North America, F.K. Hare, ed. 1984. Available from Atmospheric Environment Service / S'adresser au Service de l'environnement atmosphérique, 4905 Dufferin, North York, Ontario M3H 5T4.

The Great Lakes Water Quality Agreement: An Evolving Instrument for Ecosystem Management, O.L. Loucks & H.A. Regier, eds., 1985, 224 pp.

Lead in Gasoline: a Review of the Canadian Policy Issue / Du Plomb dans l'essence: Etude pour une politique au Canada, F.K. Hare, ed., 1985. Available from Environment Canada / S'adresser à Environnement Canada.

Lead in Gasoline: Alternatives to Lead in Gasoline (Conclusions en français), F.K. Hare, ed. 1986. Available from Environment Canada / S'adresser à Environnement Canada.

Lead in the Canadian Environment: Science and Regulation (Final Report) / Le Plomb dans l'environnement au Canada: science et réglementation (Rapport final), F.K. Hare ed., 1986. Available from Environment Canada / S'adresser à Environnement Canada.

Global Change: The Canadian Opportunity / Transformation du Globe: le défi canadien, Canadian Global Change Program Report no. 1, (Wm. S. Fyfe, ed., 1986.

Human Dimensions of Global Change: The Challenge to the Humanities and the Social Sciences, D. Braybrooke and Gilles Paquet, eds., 1987.

The Safety of Ontario's Nuclear Power Reactors, A Scientific and Technical Review, F.K. Hare, 1988. Vol. I. Report, Summary and other background papers, 288 pp. ISBN 0 7729 4042 8. Vol. II. Appendices. Available from Ministry of Energy, 56 Wellesley St. W., 9th Floor, Toronto, Ontario M7A 1B7.

Review of Studies of Health Effects of Long Range Transport of Air Pollutants, P.T. Macklem, D.V. Bates, J. Hanley, and P. Lioy, 1988.

AIDS: A Perspective for Canadians (Summary Report and Recommendations) / Le SIDA: L'état de la question au pays (Rapport de synthèse et recommandations), M. Chrétien, ed., 1988, 50 pp. (First copy free/première copie gratuite, copies additionnelles \$4.00 additional copies.)

AIDS: A Perspective for Canadians (Background Papers) / Le SIDA: L'état de la question au pays (Documents de travail), M. Chrétien, ed. 1988, 407 pp. \$40.00

Understanding AIDS: A Canadian Strategy, D. Spurgeon, ed., 1988, 106 pp. Key Porter Books Ltd, Toronto. ISBN 1 55013 124 9. \$5.95.

Science and the Public, E.R. Ward Neale, ed., 1988, 44 pp. ISBN: 0-920064-25-6. (First copy free/première copie gratuite, copies additionnelles \$1.50 additional copies.)

- A Progress Report*, Canadian Global Change Program Report No. 2, 1988, pp. 46.
Canada and the Changing Atmosphere / Le Canada et l'atmosphère en évolution,
 F. Kenneth Hare, 1989. ISBN 0-662-56747-1. pp. 44. (Also available from the Canadian Meteorological and Oceanographic Society / Disponible aussi de la Société canadienne de météorologie et d'océanographie.)
- Contribution of Satellite Observations to the Canadian Global Change Program*,
 Canadian Global Change Program Report No. 3 / *Contribution des observations par satellite au programme canadien des changements à l'échelle du globe*, Programme canadien des changements à l'échelle du globe, Rapport no. 3, 1989, 100 pp.
- La science et le public*, E.R. Ward Neale, éd., 1989, 48 pp. ISBN 0-920064-27-2. Première copie gratuite, copies additionnelles 1,50 \$.
- Plan for Advancement of Women in Scholarship / Plan de promotion de la femme dans les arts, les lettres et les sciences*, Committee for Advancement of Women / le Comité pour la promotion de la femme, 1989, 100 pp. ISBN 0-920064-29-9. \$6.00.
- Plan for the Evaluation of Research in Canada / Plan d'évaluation de la recherche au Canada*, Advisory Committee for Evaluation of Research in Canada / le Comité consultatif pour l'évaluation de la recherche au Canada, 1989, 80 pp. ISBN 0-920064-30-2. \$6.00.
- Tobacco, Nicotine, and Addiction / Tabac, Nicotine et Toxicomanie*, 1989, 108 pp. ISBN 0-920064-31-0. First copy free, additional copies \$6.00 / première copie gratuite, copies additionnelles 6,00 \$.

Selected Papers / Anthologie :

Editorial committees drawn from the membership of the three Academies collaborated in the selection of papers which appeared in the *Proceedings* and *Transactions* of the Society from 1882 to 1975. Alexander G. McKay (General Editor), *Anthologie des Mémoires et comptes rendus de la Société royale du Canada - Selected Papers from the Proceedings and Transactions of the Royal Society of Canada*. 3 volumes. The three volumes may be purchased separately (Académie I, Academy II, Academy III) or in combination. They may be ordered directly from the publishers, KTO Press (Kraus-Thomson Organization Limited), Millwood, New York.

Des comités d'édition, composés de membres des trois académies, ont choisi des communications qui ont paru dans les *Délibérations* et les *Mémoires* de la Société de 1882 à 1975. Alexander G. McKay, (rédacteur principal), *Anthologie des Mémoires et comptes rendus de la Société royale du Canada - Selected Papers from the Proceedings and Transactions of the Royal Society of Canada*. 3 tomes. On peut se procurer les trois tomes ensemble ou séparément (Académie I, Academy II, Academy III). Prière d'envoyer la commande directement à KTO Press (Kraus-Thomson Organization Limited), Millwood, New York.